

United States
Court of Appeals
for the Ninth Circuit.

SHEFF WHITE, ORLAND WHITE and JOE
M. WHITE,

Appellants,

vs.

UNITED STATES OF AMERICA,

Appellee.

Transcript of Record

In Two Volumes

Volume II

(Pages 517 to 799)

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PAUL P. O'BRIEN,

CLERK

Appeals from the United States District Court,
for the District of Oregon.

No. 12689

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Appeals from the United States District Court,
for the District of Oregon.

Mr. Hess: Call Mr. Boden. [456]

OSCAR G. BODEN

was thereupon produced as a witness in behalf of the defendant herein and was examined and testified as follows:

The Clerk: Will you state your name, please.

A. Oscar G. Boden, B-o-d-e-n.

(The witness was thereupon duly sworn.)

The Clerk: Oscar G. Boden.

Direct Examination

By Mr. Hess:

Q. Where do you reside, Mr. Boden?

A. At present, at Antioch, California.

Q. How long have you resided there, Mr. Boden?

A. Since late December, 1935.

Q. What is your profession?

A. I am a civil engineer.

Q. When did you complete your graduate work as a civil engineer?

A. I graduated in 1910 from the degrees in Civil Engineering at Iowa State College, Ames, Iowa, receiving the degree of Bachelor of Science in Civil Engineering.

Q. Did you take any other work educationally?

A. In 1923, upon presenting a suitable thesis on work which I had charge of and showing evidence of performing professional work, required for the

(Testimony of Oscar G. Boden.)

full professional degree of Civil Engineer, I received that degree at the same institution. [457]

Q. Now, what work have you had, if you will just state the experience that you have had, in the field, as a civil engineer, and particularly relative to irrigation works?

A. Well, in August, 1910, until the following March, I was engaged on sewer construction at Tama, Iowa. In March, 1911, I secured employment with the Bureau of Reclamation on the North Platte Project in Wyoming and Nebraska. I was there until March, 1925. The first five and a half years was spent on operation and maintenance as engineer and assistant to the Irrigation Manager of the Interstate Division, which comprises somewhat over 100,000 acres. The rest of the time, from September or October, 1916, I was employed on the Fort Laramie Canal, which was on the other side of the river from the Interstate Division. The Fort Laramie Canal serves about 107,000 acres.

During this time I was engaged in location and construction of laterals at the main canal, which at the point where I had it passed some six or seven hundred second-feet.

In March, 1925, I was transferred to the Riverton Project in Wyoming and was there until May of the next year. On this assignment I located and constructed laterals and main canal. The main canal where I had charge of it was somewhat over a thousand second-feet.

Q. How many irrigable acres did it carry?

(Testimony of Oscar G. Boden.)

A. Well, it was over a thousand second-feet. That is the [458] capacity. In May the work was shut down upon orders of the Secretary of the Interior at that time.

In May, 1926, I was transferred to the Kittitas Division of the Yakima Project, with headquarters at Ellensburg, Washington. There I designed and laid out and located the distribution system upon about 70,000 acres; acted in an advisory capacity on that construction and in connection with the construction of the main canal, which had an initial capacity of 1,320 second-feet.

In July, 1930, I was transferred to the Owyhee Project, remaining here until late December, '35. On this assignment I had immediate charge and direction of the location of the South Canal, the North Canal from about, oh, two or three miles this side of the Owyhee River, and of the distribution system. I did not handle construction on the South Canal, but I handled construction on the North Canal and most of the lateral system on the Project.

In December, 1935, upon the request of the Construction Engineer on the Central Valley Project, California, this gentleman now being our Chief Engineer, I was transferred to the Central Valley Project, with my headquarters at Antioch, where I have been since. I have had charge of location, charge of the design and construction of the Contra Costa Canal near Antioch, initial capacity 350 second-feet, terminating in a small reservoir, earth-filled dam, this canal being [459] about 48 miles

(Testimony of Oscar G. Boden.)

long; also two smaller relief canals, and directing the location of the distribution system, which has not yet been undertaken for construction. Also, during my first three years there I was responsible for the location of the first approximately 70 miles of the Friant-Kern Canal, which is about 150 miles from Antioch, this canal having an initial capacity of 4,000 second-feet and traversing much rough and broken and difficult location country.

Also, in that same what was known as the Friant Division, I located about the first 10 miles of the Madera Canal, with a capacity of 1,000 second-feet.

Also on that project the general plan is to divert water from the Sacramento River some 20 miles downstream from Sacramento, across a portion of the delta into the Mokelumne River by means of a proposed 10,000 second-foot canal, a rather short and low-lift pumping plant. We have made investigations on that and that is proposed for construction under my supervision.

Also, I have immediate charge and responsibility for the location and construction of the Delta-Mendota Canal. This canal will divert from a portion of the San Joaquin River known as Old River and goes about two and a half miles to where we have a pumping plant lifting the entire 4,600—The capacity of this is 4,600 second-feet at the head. We will lift the entire canal capacity approximately 200 feet, from [460] which it will flow by gravity to what is known as the Mendota Pool, where in that country the Miller & Lux canals divert. The capacity

(Testimony of Oscar G. Boden.)

where we will dump into the San Joaquin will be 3,500 second-feet.

The principal purpose of this canal is to resupply water taken from the Sacramento River to the Mendota Pool, because the Madera Canal and the Friant-Kern Canal diverting out of Friant Dam will divert water for use in those canals, which at present supplies the Miller & Lux canals.

I may say that before I left the Owyhee Project in the fall of 1935 the authorization for construction of the Black Canyon Canal was approved, and at Mr. Newell's specific request my departure down to California was delayed until I located the first about fifteen miles of this canal, a great deal of which goes through exceedingly difficult country to locate, some of the most difficult in the Bureau of Reclamation works.

I, at times, make trips to our Chief Engineer's office at Denver and while there am frequently consulted concerning canal matters on other projects.

I think that covers it.

Q. Now, just getting to the question of the Reclamation work in the Western states, state whether or not these projects you have described—Are there any comparable projects built by private interests, and what was the condition prior to [461] the time of the—some twenty-five years ago?

Mr. P. J. Gallagher: I don't think that has anything to do with his qualifications or any of the issues in this case, your Honor. Object to it as immaterial.

(Testimony of Oscar G. Boden.)

The Court: Well, I think he might say.

A. I don't know of any private irrigation systems which have been constructed in the last twenty-five years or so of a size comparable to the Contra Costa Canal, which had an initial capacity of 350 second-feet, and certainly none of these larger ones.

Q. (By Mr. Hess): That is, none of these larger canals like this North Canal,—Is that what you are referring to?

A. The larger ones and the Contra Costa.

Q. And how do some of these projects which you have designed and constructed compare in earth strata and difficulties to the strata that you encountered on the North Canal?

A. On the North Platte Project, what is known as the Interstate Canal is on the northerly side of the North Platte River. A very large part of that—That designed capacity was 420 second-feet at the head of the canal, which is over 100 miles long. A very large part of that traverses areas where there is what is locally known in that country as a Brule clay, which is similar in many respects to what we locally know as Payette formation in this country. Brule clay is, generally speaking, more of an, oh, pinkish-brown color rather than the [462] light color as in the Payette formation.

Up at Riverton we had a little different formation: Some little Brule clay and some hard formation of rather blue and green tinge in color, and that was, I would say, somewhat similar to this Payette formation, in that some of it had seams

(Testimony of Oscar G. Boden.)

and in its natural state was hard enough to have to blast it.

The Madera Canal, which is now completed, about 38 miles long, on the Central Valley Project, traverses a good many miles where the formation is locally known as hardpan. It resembles very much the Brule clay on the North Platte Project and in some general characteristics I would say is somewhat comparable to this Payette formation.

Q. Who were the general contractors who did the excavation and work generally in the construction of this North Canal and in the immediate vicinity of the break and breaks that are spoken about in this case?

A. The firm of J. A. Terteling & Sons, of Boise, Idaho.

Q. Now, you state that you had personal charge of the construction of that canal some two or three miles this side of the Owyhee River. How far upstream is that, approximately, from the break or breaks in question?

A. Well, I would judge possibly a little over 35 miles, approximately that.

Mr. Hess: May the witness have Exhibit No. 63, Plaintiffs' [463] Exhibit No. 63.

Q. Would you turn to the drawings shown in the specifications No. 6 and state whether or not that is a section of canal——

A. I don't just see a number on it, Mr. Hess.

The Court: We will recess for a few minutes.

Mr. Hess: Thank you, your Honor.

(Testimony of Oscar G. Boden.)

(Short recess.)

Mr. Hess: Would you read the last question, Mr. Reporter?

The Court: Read it.

(The last question was thereupon read, as follows: "Q. Would you turn to the drawings shown in the specifications No. 6 and state whether or not that is a section of canal——")

Q. (By Mr. Hess): State whether or not that drawing No. 6 as a part of this Exhibit No. 63 concerns the canal at the point of the break or breaks in this case? A. Yes, sir.

Q. And will you describe generally what that drawing shows?

A. Well, these two lines above here, these irregular lines, indicate the elevation along the center line of the canal, and the line drawn underneath the bottom grade of the canal indicates the bottom grade of the canal after it will have been constructed, and these figures down here, like 20,000, 20,000, 10,000, 20,000, 20,000, indicate the number of the station from the head of the canal. A station in our [464] language means every 100 feet. A break has been located as being at Station, approximately, within a few feet, 1906 plus 25, and that is located in a section of the canal known as Earth Section No. 17.

Q. Now, is that Earth Section No. 17 drawn and represented on this map?

A. Yes, sir, that is this figure up here (indi-

(Testimony of Oscar G. Boden.)

cating). It shows the designed base width 16 feet, the normal maximum water depth as being 6.8 feet——

Mr. P. J. Gallagher: Pardon me, Mr. Witness, will you just wait a minute and let me get that, just a second.

A. Yes, sir.

Mr. P. J. Gallagher: Sixteen feet from the bottom?

A. That is correct,—And the normal maximum water depth will be 6.8 feet; and the minimum total bank height 4 feet freeboard, or ten feet eight; and the minimum width on the lower bank, or the crown as we sometimes say, 14 feet. It also shows, by means of a dotted line here, the position of a core bank wherever needed, and the specification provide that where that is built it shall have a height, minimum height, of a foot above the designed water depth, and a minimum top width of 8 feet. The capacity here is computed as being 405 second-feet.

Q. (By Mr. Hess): Now, then, there is a round surface line that is marked on the top, up at what you represent the top [465] or some portion of the upper bank, and goes down through the lower embankment near the top and then continues on for a distance where there is a little dotted line and an arrow pointing upward. Would you describe what that represents or indicates?

A. Well, this general sloping line, that says "Ground Surface," is simply put on there to show the section on a slope. This line could be higher or

(Testimony of Oscar G. Boden.)

lower. That is just simply indicated there. And this dotted line, the extreme right-hand line, I would say, it says "2-to-1 slope where water surface at inside of embankment is 4 feet or more above natural ground surface." In other words, our ordinary outside slope of the bank would be at least one and one-half to one, which means that on such a slope for every foot up, why, the slope line would intersect a foot and a half out, and where the water surface may be at four feet or more, why, this outside slope, we flatten it off in order to give it wider embankment, which would be two to one. In other words, if the triangle would be a foot high here the bottom would be two feet out and flatter slope.

Q. Now, state, in the course of construction as you came to this particular place, and as you come to your ground generally, what security is taken as against seepage, in the protection of your walls of your canal or bottom of your canal?

A. I don't know as I followed that exactly.

Mr. Hess: Would you read it, see if he understands it. [466]

The Court: Read it.

(Pending question read.)

Mr. Hess: I will withdraw that.

The Court: The question is stricken.

Q. (By Mr. Hess): I will ask this question now: This is a part of the plans, this Drawing No. 6 is a part of the plans of the Terteling contract, is that correct? A. Yes, sir.

(Testimony of Oscar G. Boden.)

Q. And state whether or not this canal was constructed according to the plans and specifications—the specifications?

Mr. P. J. Gallagher: Just a minute. This is objected to unless the witness knows of his own knowledge that fact.

Mr. Hess: That is what I am asking.

The Court: The witness may answer, if he knows at this particular spot. I am not talking about the canal generally.

A. It was constructed in accordance with the specifications, yes, sir.

Q. (By Mr. Hess): As you construct a canal, state whether or not field notes are taken and made?

A. Yes, sir.

Q. Were field notes made in this particular section where the break occurred before you proceeded with excavation?

A. We take what is called cross-section notes, the levels, and indicate where the sides of the canal would intersect the ground surface, and we call that at that point a cut of [467] so-and-so many feet and a certain distance out, on both the upper and the lower sides. Also, if the cut on the lower side is less than the normal water depth we would stake out this core bank as shown in Earth Section No. 17, and from these notes the quantities of excavation are computed and used in paying the contractor for his excavation work.

Q. Would you refer to those field notes, please? Have you got them with you?

(Testimony of Oscar G. Boden.)

A. I happen to have here the original cross-section notes, including the—That is, the portion of the canal including where the break was.

Q. Would you refer to that and tell us what page that is, please?

The Court: What exhibit is it?

Mr. P. J. Gallagher: It is no exhibit.

Mr. Hess: It is part of the field notes that were reserved in the exhibits, your Honor.

The Court: Well, what is the exhibit number?

Mr. Hess: What exhibit number is that? Sixty-five? Let me see it, please. Sixty-five, your Honor.

The Court: All right, let's have it marked as a pre-trial exhibit under this number and exhibit it to counsel. I think you can mark it in the front of the book.

(The field notebook referred to was thereupon marked for identification as Defendant's [468] Pre-Trial Exhibit 65-A.)

Mr. P. J. Gallagher: Could we ask the witness one question with reference to this?

The Court: No. Is it your purpose to offer this in evidence?

Mr. Hess: What is it, your Honor?

The Court: Is it your purpose to offer this in evidence, or just to examine it?

Mr. Hess: Well, to testify from it, your Honor.

The Court: All right.

Mr. P. J. Gallagher: We want to cross-examine on this.

The Court: Naturally.

(Testimony of Oscar G. Boden.)

Q. (By Mr. Hess): Referring to exhibit marked for identification 65-A, state what page there or how you designate the page that refers to this particular Earth Section No. 17 as described on Drawing No. 6 of the specifications?

A. Well, the pages aren't numbered here, but the cross-section notes continue, and at the point, at the site where the break is located as being Station 1906 plus 25 the original cross-section notes as taken in the field are shown here. Is that an answer to your question?

Q. State whether or not the cross-section notes show that the canal was constructed at this point as set forth in the drawing, or just what it does show.

A. It shows the extent to which excavation for the canal [469] was to be made and the amount of the core bank.

Q. Would you tell us what that was?

A. Well, at Station 1906 plus 25 feet back of the location of the break it shows that on the center line of the canal there was a cut of 17.6 feet. On the lower side, where the slope, the inside slope, of the outer bank would intersect the natural ground slope, the cut was 9.3 feet at a distance of 22 feet from the center line; and then it shows that the projection of the normal high water surface would not have intersected the natural ground surface until a distance of $24\frac{1}{2}$ feet from the center line. It also shows that the fill at the outside edge of the core bank would have amounted to a foot and four-tenths

(Testimony of Oscar G. Boden.)

in depth at a distance of 30.8 feet from the center line.

Now, at 25 feet downstream from the break, or Station 1906 plus 50, the center line cut would be 19.2 feet, the cut on the lower side 9.7 feet, which, by the way, is——

Mr. Lytle: May I have that last figure again, please?

A. 9.7 feet at $22\frac{1}{2}$ feet from the center line, this being 2.9 feet greater than the water area. It shows also that a projection of the water surface would intersect the ground slope at $25\frac{1}{2}$ feet from the center line and that the fill at the lower toe of the core bank would be 1.3 feet at 30.6 feet distance, and it also shows, of course, the depth cut each side. And over on this other page the computations for the [470] quantities, and it shows that in that 50-foot distance there the core bank was very minor in amount, on account of the depth cut on lower side being only 3 cubic yards, as computed here. From the cubic yards for excavation as computed in the cross-section the items for payment are made up. In other words, these show pay quantities between those particular sections, and in addition to that there might be extra work, other things that would have to be added to it.

Q. (By Mr. Hess): Now, then, in just plain English language, so it will be indicated, how far do the field notes show a core bank in connection with the actual repairs that were made in both

(Testimony of Oscar G. Boden.)

the first and second breaks in this case, upstream and downstream?

A. Well, if we go away back here to the page preceding, it shows 600 or more feet, and it goes back in number, in distance, and the break was at 1906 plus 25, and it shows core bank proceeding on the lower side of the canal—here at this Station 1912 plus 25, some 600 feet beyond the point at which the canal broke.

Q. In which direction? A. Downstream.

Q. Downstream. What does it show upstream?

A. Well, I stop at 600 feet. It continues on back for a considerable distance. On the downstream end there it shows that we ran into a heavier cut there at about 600 feet, but there [471] wouldn't be any core bank there, and some distance it starts in again.

Q. How far up above where the break occurs?

A. I will have to look——

Q. That there wouldn't be any core bank where? Where does that apply with reference to the break?

A. We didn't have any core bank where there would be a very deep cut, didn't have any requirement for it. At the site of the break we didn't have a core bank because of the water depth, but we built an extra small core bank just as an added precaution.

Q. But, in any event, as I understand your testimony, the core bank that was constructed was for the entire length of this particular repair that was made, is that correct?

(Testimony of Oscar G. Boden.)

A. Oh, yes, some distance each side, continuous.

Q. Now, will you describe to the Court the construction of the core bank?

A. The specifications provided—and strict adherence was insisted upon that work carried out in accordance therewith or even better to some extent—provided that where the water surface in the canal was——

The Court: Now, just a moment. I strike that introduction because the witness is apparently testifying what would have been done. I want to know what was done, if you know.

A. We did whatever this—— [472]

The Court: All right, that is all right, now, tell just what you did on the ground. That is what I want to know.

A. All right. At the point here this core bank was staked out and was constructed in accordance with the specifications, which provided that before the main canal, that is, the major excavation was performed the core bank should be built in advance of the principal part of the excavation, of selected material and in a manner as directed by the contracting officer, and which——

The Court: That doesn't mean anything to me, "in a manner as directed by the contracting officer." I want to know what was done on the ground, if you know.

A. All right, we built that with excavating equipment, such as bulldozers and carryalls, and

(Testimony of Oscar G. Boden.)

compacted the embankment of selected fine materials.

The Court: And it was 8 feet wide?

A. That was the minimum. Sometimes we made it wider.

The Court: I don't care anything about what you did sometimes. I want to know what you did in this place. Do you know?

A. That shows 8 feet, and that is the way we built it.

The Court: All right. Now, how high was this original structure at the point of the break, 1906 plus 25?

A. On the side near the center line there was no fill because it was—that was at $24\frac{1}{2}$ feet at 25 feet back of it, and at [473] 25 feet beyond there was no fill at $25\frac{1}{2}$ feet. Then in the case of the 25 feet upstream the outside fill would have been 1.4 feet.

The Court: You mean at the point of the break you made no fill and therefore the core bank was built above the original structure?

A. We built the core bank above the original ground structure, yes, sir.

The Court: In other words—

A. And the height at the outside toe of this core bank 25 feet back of it was 1.4 feet, and 25 feet the other way was 1.3 feet. In other words, the depth of cut was such that the fill was very low. Does that make it clear?

The Court: Then at water level why would the

(Testimony of Oscar G. Boden.)

water be—you mention water level—the water would be not against the core bank but against the original structure? A. That is right.

The Court: I understand. Pardon me for the interruption. Go right ahead, Mr. Hess, now, with whatever you want.

Mr. Hess: Thank you, your Honor.

Q. Referring to Exhibit No. 80, this drawing, was there anything at the bottom of the canal where constructed that indicated a stratum as shown in this drawing 80?

A. Our practice was, where we——

Mr. Lytle: We object to the statement of practice as not [474] being responsive to the question.

The Court: You have to testify here to your knowledge, that is, as far as you remember it. If you don't remember, you will just have to say so.

A. Well, wherever we struck a so-called porous stratum, or what we thought was so, we dug it out and put selected fine material in.

The Court: Do you remember this place?

A. I will have to give a little explanation, if you will permit me.

The Court: All right.

A. During the construction of the canal, even, inspectors and anyone connected with it from our forces were constantly instructed to be on the look-out for what they thought were possible porous strata or weak spots, and we had inspection along and they made the reports personally—I was out over the work most of my time—and it is incon-

(Testimony of Oscar G. Boden.)

ceivable to me that, with the number of employees, including myself, making constant inspection of the work, that we would have overlooked any place that appeared to be a so-called porous stratum. If we had seen it we would have overdug and filled in.

The Court: Well, of course, that hardly answers the question. You know, we are all human——

A. Yes.

The Court: ——and all make mistakes, even judges——and [475] the thing that they are trying to find out from you is as to just how much at this date you know about how much was actually done personally. That is, not what the construction should be, but how much you remember of this particular spot from your own recollection.

A. Well, of course, this was done fourteen years ago. It is difficult to——

Mr. Lytle: We have difficulty hearing the witness, your Honor.

The Court: Speak up so counsel can hear you.

A. I beg your pardon. I say that was work performed some fourteen years ago and it is difficult to recall each——just any particular spot, that is, within a few feet, but I would say that if a porous layer or stratum was envisaged or seen at that point that corrective measures were taken, in view of the fact that every effort was always made to make the canal safe and everyone was so instructed.

The Court: But you don't remember?

A. I couldn't swear that I——

The Court: Nobody is blaming you for that——

(Testimony of Oscar G. Boden.)

A. A matter of 25 feet, or something like that.

The Court: As a matter of fact, I should distrust you if you swore that you could remember.

Mr. P. J. Gallagher: Now, just a minute. We move to strike the testimony of the witness given in response to the [476] last question because it is not based upon a personal recollection of what took place and what the facts were, but merely a question of what the practice was.

The Court: No, I think the testimony should stand, because I think the witness is trying to be perfectly fair, and, as I say, it is in the record for what it is worth. I am the person to decide what weight it will have.

Mr. P. J. Gallagher: I may say to your Honor that I trust your Honor implicitly on that.

The Court: Well, you will have to.

Q. (By Mr. Hess): Mr. Boden, based upon your experience as an engineer and your actual experience in the construction of many miles of this canal, North Canal, as you constructed it state whether or not the canal would have held and carried water through the canal for any considerable period of time if there had been a stratum entering the bottom of the canal as indicated in this Exhibit No. 80? A. I don't think so.

Q. Will you give your reasons, tell the Court your reasons, for that?

A. Because if there had been a very porous stratum water would have entered and found its way through in much less time than the somewhere

(Testimony of Oscar G. Boden.)

twelve years that the canal operated successfully before this break occurred.

Q. Viewing these exhibits, picture exhibits—you were here [477] when they were introduced and explained by Mr. Merritt? A. Yes, sir.

Q. —is there anything indicated on any of the exhibits, or according to your observation on the ground and in the construction of this portion of the North Canal, that would indicate a sealing of the upper bank of the canal at or near the points of the breaks in the canal?

A. I was not here at the breaks so I can't speak of how the break looked, but during the construction—I am not sure that I understood your question correctly—if I may have it read.

Mr. Hess: I would like to have that read to the witness again, your Honor. I would like to have that answer read.

The Court: All right.

(Last question and answer thereto read.)

A. —during the construction we made no effort on the upper side of the canal to seal off what might have been termed porous stratified layer, for the reason that we felt no concern in that respect about the safety of the canal. I am not familiar enough with these photos, not having seen the ground, to feel competent to say just what they represent.

Q. (By Mr. Hess): Well, I will ask you this question: If strata would be revealed as indicated in Drawing No. 80 on the upper bank of the canal,

(Testimony of Oscar G. Boden.)

state whether or not, in your opinion, good engineering judgment would require or not [478] require the sealing off of that upper bank? A. No, sir.

Q. Give your reasons.

A. I don't think that it would add to the security of the canal, as your breaks would not occur on the upper side of the canal, they would, if at all, be on the lower side, and sealing, if water got in there, would entrap the water and would prevent or at least greatly retard its return in the canal when water was taken out and, in my opinion, would add nothing to the safety of the canal.

Mr. Hess: That is all.

Mr. P. J. Gallagher: Shall we proceed with cross-examination?

The Court: Yes.

Cross-Examination

By Mr. P. J. Gallagher:

Q. Will you let us have that exhibit that was marked—the one he has in his hand?

The Court: Sixty-five.

Mr. P. J. Gallagher: No, no, the field notebook.

Mr. Lytle: 65-A.

Q. (By Mr. P. J. Gallagher): Mr. Boden, I am now referring to what has been marked as Exhibit No. 65-A that you have had before you in your testimony. I will ask you if you know when these field notes were made in relation——

A. The dates are shown on the top of the page. I believe it [479] is February 2nd, '34. Also, it

(Testimony of Oscar G. Boden.)

shows there the names of the field party, the men who did the work.

Q. And when you answered that question you answered only from what information the book gives you? You don't know when they were made in relation to the time when the work was done?

A. The dates upon which notes were taken were always shown in the field book.

Q. You are now testifying to a general practice and not to anything you know about?

A. I know that these notes were taken on that day, because the personnel taking them were reliable men, and the dates shown, there was no reason whatsoever for making a different date.

The Court: And they were under your supervision? A. Yes, sir.

The Court: Now, the rule, of course, is entirely different with regard to records than the other situation we have been talking about. Engineering practice and conforming to the specifications is a thing that even a supervisor can't testify to with respect to a particular place, but he can testify as to records which are kept under his supervision in the ordinary course of work, and those thereupon become primary evidence.

Mr. P. J. Gallagher: Very well, I won't pursue that any further. [480]

Q. Now, when were these field notes made, then, in relation to the time of construction?

A. Before construction. They would have to be,

(Testimony of Oscar G. Boden.)

because they show the excavation limits and the depth.

Q. Now, on the point that you have designated as 1906 plus 25, you stated that the ditch at that point, or canal at that point, was built under the surface of the ground, that is, below the surface of the ground, and consequently would have required very little core bank at that place.

A. Yes, sir.

Q. Could you examine this and tell me how many yards there was put into the core bank at that particular point?

A. In a distance of 50 feet, 25 feet above and 25 feet downstream——

Q. Twenty-five feet above and 25 feet below?

A. Yes, sir, there was 50 feet.

Q. Fifty feet of space.

A. Twenty-five feet each way—according to the computations, sir, the fill was so small that only 3 cubic yards, figured to the nearest cubic yard——

Q. That would be 3 cubic yards over a distance of 50 feet? A. Yes, sir.

Q. And those notes show on what part of that 50 feet the core bank was placed?

A. A cross-section was taken at the limits of this 50-foot [481] stretch.

Q. That would be 3 cubic yards spread out over a distance of 50 feet, and how wide an area?

A. Oh, that was very little there, because on the inside of the bank it did not require any.

Q. So it must have been very little.

(Testimony of Oscar G. Boden.)

A. Oh, I misspoke myself. I looked in the wrong column—if I may correct myself.

Q. Very well.

A. There were 50 cubic yards.

Q. Fifty cubic yards? A. Yes, sir.

Q. Now, give me the dimensions of the area——

A. No, wait a minute—pardon me, I got the wrong number.

Q. Well, take your time and get the right column.

A. Yes, sir—3 yards.

The Court: I think, in view of the situation, I will give you a chance to study this yourself and the witness a chance to study it and I will recess until one-thirty.

(Whereupon, at 12:10 o'clock p.m., Tuesday, June 15, 1948, a recess was had until 1:30 p.m.)

Afternoon Session, 1:30 P.M.

OSCAR G. BODEN

thereupon resumed the stand as a witness in behalf of the defendant herein and was examined and testified further as follows:

Cross-Examination
(Resumed)

By Mr. P. J. Gallagher:

Q. Mr. Boden, did you finally check this exhibit you were testifying from to determine the exact yards you had in the core wall?

(Testimony of Oscar G. Boden.)

A. The notes show there that in that 50 feet, according to the calculations, there was 3 cubic yards.

Q. Three cubic yards? A. Yes, sir.

Q. Now, that would be over an area 50 feet long and how wide? What is the base of your core?

A. That one section there, the base is about 3.8 feet, and the other 3.6.

Q. That is, in width? A. Yes, sir.

Q. 3.8 feet, and the other was 3.6, by 50 feet. In preparation for the core wall, as I understand it, the sagebrush is cut off the bank and—

A. If there was any there.

Q. If there was any there—and then the ground is scarified by some plowing to make the union between the core and the—

A. The furrows 8 inches deep and not farther apart than 3 feet. [483]

Q. Then when that is done you bring in the material to spread out?

A. The fine material is brought in by some form of scraper and carryall and deposited and then gone over by the machinery and packed.

Q. This 3 cubic yards could not have given very much depth to your core wall.

A. There wasn't a great deal of depth required. It was very shallow. In fact, we could have gotten along well without the core wall on account of the excess on the other side. It was simply an added precaution.

Q. Now, the purpose of the core wall is placing

(Testimony of Oscar G. Boden.)

in the bank a stratum of impervious material so the water could not soak through? That is the purpose?

A. That is basically the purpose, yes.

Q. Then on top of this core wall, filling the bank on up, you just take the spoil dirt from the canal?

A. Well, generally speaking, except effort was made to place the finer selected materials available to even increase this minimum core bank, and the rest is just thrown all over.

Q. I am trying to confine myself, Mr. Boden, to the section here where the canal broke and trying to get your testimony as to just how that bank was constructed, and to that extent I wish you would confine your answers to exactly what happened there, as far as your records show. [484]

A. Well, after we have the core bank in it would it be permissible to excavate the entire cross-section of the canal and throw it out to build up the bank at least to a minimum height and width. However, in doing so we would attempt to put added fine selected material on top of the core bank in order to achieve more than the minimum.

Q. Now, these field notes and plans and specifications, of course, are all drawn up and the field notes made before there is any excavation?

A. That is right.

Q. And whether or not a pervious structure was found in the canal bed would not be reflected in these field notes, would it?

(Testimony of Oscar G. Boden.)

A. That would have no bearing on the cross-section.

Q. No. Now, you have no written evidence nor field notes nor other information here, have you, to indicate whether or not your contractors or your field men found pervious structures in the bank?

A. That would not show in these notes.

Q. Well, have you any other data that would show?

A. Offhand, I couldn't say, unless we had access to inspectors' and other employees' reports which they secured in the inspection of the work.

Q. And have you seen any of those? Have you seen any such report indicating a porous structure in this canal bank? [485]

A. If the reports indicated such a stratum I am positive I would have seen it.

Q. No, no, but have you seen it? Have you seen any?

A. That I must qualify by saying that my memory in fourteen years can't—

Q. You have no recollection of seeing any such a thing?

A. I would also qualify that by saying that at this date I could not positively say that I saw those notes.

Q. I see. Well, ordinarily, if your field men or your inspectors would find a porous structure in the excavation they would file such a report, wouldn't they?

A. Yes, sir.

(Testimony of Oscar G. Boden.)

Q. But, so far as you are concerned, you have no recollection now of that being called to your attention? A. Not now, fourteen years later.

Q. No; but we agree on this, do we not, that if there was a porous structure discovered in the excavation good engineering and good construction would require that porous material to be taken out and excavated and better material put in?

A. Yes, sir, if there were any reason to think that it would endanger the canal, other than being just a little spot that you felt that would do no harm, you wouldn't, probably, do it; but if there were any amount, why, it would be cut out and finer material put in.

Q. That could be also rectified and remedied by sealing over [486] the portion where that porous material was found?

A. Well, such removal and filling in with fine selected material would in effect be the sealing.

Q. There was no sealing placed on the lower side of this canal while you were in charge, was there? A. In spots we did, yes, sir.

Q. Well, now, I am trying to limit myself to the area where the break occurred.

A. You say you are limiting it?

Q. Yes.

A. To that I must make the same answer: Fourteen years later, I cannot positively say that.

Q. And there are no estimates on file indicating that your subordinates or yourself determined that it was necessary to seal the inside of this canal?

(Testimony of Oscar G. Boden.)

A. If it were determined necessary there would be records of that in the Project offices, I am satisfied.

Q. And the fact that there are no such records indicates to you that there was no sealing done?

A. I wouldn't say that there are not any records. I said that if a porous place were discovered there would be records. I didn't say there were no records.

Q. Now, this core wall that you have described as having placed in the canal would have no efficacy or would not tend to cut off a water flow or seepage that affected the banks of [487] the canal below the point of the base of the core wall, would it?

A. I am not just sure I understand your question correctly.

Mr. P. J. Gallagher: Well, maybe the Reporter will read it to you better than I can repeat it, if the Reporter can read it.

The Court: Read the question.

(Pending question read.)

A. It would depend upon the natural ground in place below the core bank.

Q. Yes. A. That is self-evident.

Q. And if that ditch crosscut a porous section or stratum, and the core wall being placed up in the air, where you had put it, on top of the bank, would have no efficiency in cutting off the flow of water that came through the porous structure below, would it?

A. That is practically the same question, isn't it?

(Testimony of Oscar G. Boden.)

Q. Yes. A. I answered that.

Q. By a qualification. Now can you answer it directly?

A. I must make the same qualification,—My memory in fourteen years does not—

Q. No, this does not depend on your memory, Mr. Boden, and you follow me and I will try to make it plain. What I wanted [488] to ask you, a core wall placed in the bank at the point you say it was constructed would not cut off a leakage in the ditch at a point below the base of the core wall?

A. If there were leakage below the core wall, the core wall, of course, would not stop that.

Q. I see.

A. Dependence would be made on the natural ground there.

Q. Have you heard the testimony of the other witnesses in this case that described how they finally repaired the ditch? A. Yes, sir.

Q. Particularly the testimony of Mr. Terhune that the cutting—

A. That was the gentleman that had the equipment, yes, sir.

Q. —that they cut a core deep in the bed of the ditch and built that core up and it held for the portion that the core wall was put in? You heard that testimony? A. Yes, sir.

Q. If a similar core wall was put in this ditch cutting off any pervious strata, it would in all likelihood have held?

A. I wouldn't say that. In my best judgment,

(Testimony of Oscar G. Boden.)

based on experiences I have had with other canals such as this, it is my judgment that such a core wall would not be necessary.

Q. Well, would you have any other way of stopping that water from cutting your bank away?

A. If there were porous strata there that we encountered we would have removed sufficient of that and refilled with fine [489] material to have effected a blanket, you might say, that would retard water.

Q. And that would have been good engineering?

A. Yes, sir.

Q. Well, now, do you take the position that there is no porous material in the banks of that canal or near the bottom of the canal? Do you take that position?

A. Do you mean at the point of the break here?

Q. Yes, at the point of the break?

A. From the evidence that I have heard, I am not convinced that there is a decided porous layer there that extended into the lower bank.

Q. Well, are you convinced that there is a porous structure there?

A. No, sir.

Q. You think not?

A. I am not so convinced.

Q. Now, assuming—Taking a look at Exhibit No. 73—that the bottom part of that picture showing that stratum is made up largely of gravel, rock, and other sedimentary formations that you see there, would you say that was or was not porous, looking at that picture?

(Testimony of Oscar G. Boden.)

A. As I stated before, I was not present at the break and did not see it and I could not say that that represents the break as it existed at that time, from my knowledge. [490]

Q. Well, assume that it does, assume that that is an accurate photograph of the conditions there, would you say that that reveals porous material?

A. I wouldn't say so, necessarily, no, sir.

Q. You think with that sand and gravel that it is watertight?

A. It often is. You strike a streak of gravel,—You call it cemented gravel, conglomerate and very watertight—and you would have no fear of going through it, you would have no fear of it causing a break.

Q. Well, would you say that gravel such as you see depicted in that Exhibit 73 was cement gravel or watertight gravel? I just want to get at the basis of your—

A. I say I am not sure that that, as you say, depicts cemented gravel or anything else.

Q. What do you think it is?

A. Beg your pardon?

Q. What do you think it is, what type of gravel?

A. Well, it is just a picture to me. Not having seen the picture,—You show me a picture, and I don't know whether the break was there or someplace else.

Q. You are not giving any credit to the veracity of that picture at all?

A. I am simply saying that I am not familiar

(Testimony of Oscar G. Boden.)

with the conditions at the break there, not having seen it.

Q. And you are not taking into consideration the physical [491] conditions that are shown by Exhibit No. 73?

A. Well, I couldn't say by looking at the picture just what was gravel or something else.

Q. Now, your testimony as to the number of projects you have worked on and the locations of the territories that you worked in, they were really structures similar in type to the structure here in the North Canal?

A. Similar to what we call—That is, it has some characteristics that we would call the general Payette formation. I don't know that there is a scientific term, but that is the general term that we apply——

Q. Well, to make it apply a little closer, would the general canals you have worked on be similar to the general sections of the North Canal in the vicinity of where the breaks occurred?

A. There would be similar places, yes.

Q. There would be outcroppings of formations, some places you call it hardpan, some places you call it Brule earth, and some places something else, but they would be all deposits placed in there by some earth movement? A. Yes, sir.

Q. But the mere fact that in the construction of the North Canal you ran into some difficult materials was not extraordinary, was it?

A. Oh, no. [492]

(Testimony of Oscar G. Boden.)

Q. And you have had experience in handling similar structures at other places?

A. Yes, sir.

Q. Now, in your testimony I think you said you began to supervise at a point four or five miles down from the head of the canal.

A. Oh, that may be a mile or two off, but that would not apply.

Q. Yes, I appreciate that,—And that took you over what you call the Mitchell Butte section?

A. Yes, sir.

Q. Now, were you here when the break occurred in the Mitchell Butte section?

A. No, sir.

Q. You were not here. It appears from the evidence that there was a break in 1940 and again in 1942 over the area upstream from where this break took place. That would naturally be in the area that you were supervising the construction of.

A. Well, I would have to have the location of the break located—I mean placed more definitely and go back to the records to find the exact point from which I had supervision of the construction.

Q. You know where the Mitchell Butte break took place, don't you? [493]

A. I haven't been there, sir.

Q. No, no, but do you want to tell this Court now that you have no idea where the Mitchell Butte break took place?

A. I was in California at the time and haven't been up here and viewed the point, so I could hardly

(Testimony of Oscar G. Boden.)

be expected to say that I know exactly where a break was when I never saw it.

Q. I know, but don't you have any confidence in what you hear from your subordinates?

Mr. Hess: Now, we object to that, your Honor, as not proper cross-examination. We have been confined here to this particular spot.

Mr. P. J. Gallagher: Yes.

Mr. Hess: To what happened at this break.

The Court: Yes, but the question of whether he has confidence in his subordinates has nothing to do with it, I will say that right now.

Q. (By Mr. P. J. Gallagher): So you are not prepared to say that you know anything about where the Mitchell Butte break took place?

Mr. Hess: We object to that as immaterial and not proper cross-examination.

The Court: No, he has a right to ask the question.

A. I don't know, again, just where it occurred, no, sir.

Q. (By Mr. P. J. Gallagher). Do you know where the Cow Valley [494] break took place?

A. No, sir, not exactly. I have heard in a general way that that break is up somewhere in the Cow Hollow or East Cow Hollow area, but having not been there since it occurred I have no detailed information on it.

Q. Would that be in an area over which you had charge of the construction?

A. Near Cow Hollow, yes, sir.

(Testimony of Oscar G. Boden.)

Q. Do you know anything about the nature of that break? A. About the break?

Q. Yes, the nature, and what caused it?

A. No, sir. As a matter of fact, I didn't know there was a break there until I came up here.

Q. You realize, I think you have testified, that any substantial deposit of pervious material, either in the walls or in the bottom of the ditch, should be dug out and replaced with impervious material in order to have a good engineering job?

A. Yes, sir.

Q. Now, earlier in your direct examination, when you testified that if there had been any pervious structure or stratum in the sides or bottom of this ditch sufficient to carry water, that would have caused a break in the canal earlier than what occurred?

A. I am not sure that I said it would have caused a break. [495] I believe I said that if it had been pervious material of any amount it would have shown up in much less time than in the eleven or twelve years of operation.

Q. Now, that would all depend, would it not, on the amount of pervious material and the rapidity with which it absorbed water?

A. You might have, if a condition were just right, you might have a smaller pathway in pervious material that the water passed through that might cause as much damage as—Or, rather, pass through much as water through a larger area that was not quite so pervious, if I make myself clear.

(Testimony of Oscar G. Boden.)

Q. And it would also depend somewhat upon the very nature of the pervious material, wouldn't it, as to how rapidly it filled up with water?

A. Yes, sir.

Q. You think that any water that seeped into the west bank of the canal would, instead of going down or percolating out under the canal, just drain back into the canal?

A. Your Honor, instead of saying west bank,—I don't know about directions—If you would just say upper bank and lower bank.

Q. Upper bank.

A. I would think it would get back in the canal, yes, sir.

Q. Now, if it appears that there are seeps coming to the surface below the canal since this repair has been made in [496] sufficient amounts so that it can be easily discernible and flowing away in a small stream, where would you say, in your judgment, that water came from?

A. It might come from a number of different sources, that is possible.

Q. Well, what is the most logical place that you think it came from?

A. I don't know that I have an opinion on where for some seep spot there might be a source of water.

Q. Could it not very well have come from water impounded into the bank seeping into a stratum below the ditch and then coming to the surface?

A. In certain circumstances seep might appear

(Testimony of Oscar G. Boden.)

from water coming down through the bottom of the canal and showing up under the bank, yes, sir.

Q. And could it not come down from water imbedded in the bank of the canal if the stratum was porous enough to let the water soak through?

A. If the bank became saturated so that it had a lot of water in it, the chances are it would have a break show up before seepage down below.

Q. Well, it did break once. I am talking now about a condition that existed after the break and since the repair. I am asking you now if you have an opinion as to where that might flow from? [497]

A. Well, naturally, not being familiar with the conditions out here, I could hardly answer that question.

Q. Would it be fair to assume that that water might come from water that soaked into the upstream side of that bank and percolated down to a pervious structure and then found its way to the surface?

The Court: Counsel, I question if this examination is doing anybody any good. The witness is very positive about the fact that he does not know anything about the conditions. Obviously he can't give an opinion if he doesn't know the conditions.

Q. (By Mr. P. J. Gallagher): Now, Mr. Boden, if a pervious stratum intersected this canal as shown in Exhibit No. 80, would it not have been good engineering to determine the extent of that pervious stratum and its effect upon the flow of the ditch in order to determine whether it would be a danger or not?

(Testimony of Oscar G. Boden.)

A. I don't know that there was a pervious stratum that intersected this lower bank.

Q. Were you assuming that there was?

A. This is a hypothetical question, I understand,—

Q. Yes.

A. —that if the canal intersected a pervious stratum that extended to the lower bank or through it, obviously it would have to be in the natural ground and not in the built-up bank, [498] and if there were not some remedy done to build up that condition then in time some water would percolate through.

Q. And as that water percolated through it would have a natural tendency to weaken the structure, wouldn't it?

A. Not too necessarily. If it went through material that was very firm, like fissured rock, I think it would be a tremendously long time to ever weaken that formation.

Q. Now you talk about fissured rock. Now, you did not encounter any fissured rock in that—

A. Well, what I meant by fissured rock,—You say weakened formation—What I meant by that, that we could have rock in there—In some places you could have rock with open seams in it through which water would percolate until the rock had become weakened.

Q. So that the rapidity by which that water would finally percolate out and come to the surface

(Testimony of Oscar G. Boden.)

would depend entirely or to a large extent upon the type of material it was going through?

A. I would say not necessarily the type, but the openness of the material would determine whether it went slow or fast, if that answers you.

Mr. P. J. Gallagher: That is all.

Mr. Hess: That is all, Mr. Boden.

(Witness excused.) [499]

The Court: Now, I suggest that we are proceeding quite slowly. I had anticipated that this case would end up by tomorrow afternoon. I do not want to crowd you, I haven't crowded anybody so far, but I think that the case can be put on a little faster than it is going on. Both sides are going into some unnecessary repetition and some unnecessary detail. I am going to take into consideration holding night sessions someplace along in here if you do not get along as fast as I think we should. I would rather not hold any night sessions if we can help it, but I will take into consideration the progress we have made by this evening and then on tomorrow night if we haven't gotten anyplace and I think we should hold a night session we will hold one.

Mr. Hess: We will try to speed it up as much as we can. We realize this is an important case, and we have taken into consideration the time they took to put on their case. We are trying to put ours over the plate as fast as we can.

The Court: Yes. I am not going to hamper

you. I don't want to put in more hours if we can help it.

Mr. Veeder: Call George N. Carter. [500]

GEORGE N. CARTER

was thereupon produced as a witness in behalf of the defendant herein and was examined and testified as follows:

The Clerk: Your name is George M. Carter?

A. George N.

(The witness was thereupon duly sworn.)

The Clerk: George N. Carter.

Direct Examination

By Mr. Veeder:

Q. Where do you live, Mr. Carter?

A. At Boise, Idaho.

Q. Would you state your age, please?

A. Sixty.

Q. Would you give a general statement of your education and background?

A. I graduated from the University of Nebraska in 1913 with Master of Science degree in Electrical Engineering.

Q. Since finishing school, would you give a statement of the character of work that you have performed and the positions which you have held?

A. I have engaged practically all of the time in irrigation or power work, plans, design and construction. Immediately after leaving school I came to Idaho and went to work for the Bureau of Recla-

(Testimony of George N. Carter.)

mation in construction of the Jackson Lake Dam in Wyoming, the Arrow Rock Dam in Idaho, and later on [501] surveys for the Hillcrest and Black Canyon units of the Boise Project. That work was completed in 1916. Thereafter I worked a short period of time for the U. S. Geological Survey on hydrographic work and ran a backwater curve up Snake River above the Swan Falls power dam. Beginning in 1917 I went to Twin Falls, Idaho, where I was Assistant to the General Manager on the operation of the Twin Falls South Side Project. It is a large project, 200,000 acres, with many canals. The main canal at the head has a carrying capacity of 3600 second-feet.

In 1918 I went to Jerome, Idaho, as assistant engineer on completion of construction of the Twin Falls North Side Land and Water Company Project. That was a project of 170,000 acres, involving large canals. My work was design and operation of some of the construction of completion of the canal system, all as required by the State Engineer of Idaho, in compliance with a contract for completion of the system under the Carey Act law.

In 1921 I came to Boise, Idaho, in the State Department of Reclamation, where I was Director of Water Resources for five years and Commissioner of Reclamation for five years. In that position the Department has charge and supervision of the distribution of all of the adjudicated streams of the state, adjudication of the water, and appointment of the water masters, and so forth. This Department

(Testimony of George N. Carter.)

is charged with the supervision and inspection of all dams by the State from [502] the standpoint of safety, in the interest of protection of life and property. Also, there were various decisions to be made in connection with the acceptance of Carey Act irrigation projects which were about completed, and many other miscellaneous duties that come to the State department.

In 1931 I opened an engineering office of my own in Boise, Idaho. For five years I engaged in irrigation work in connection with the rehabilitation of irrigation projects and some drainage work, and things of that nature.

In 1936, I went to Ogalalla, Nebraska, where I was engineer in charge of, first, the designs—or preliminary surveys and designs, and later the construction, of a large storage dam, in the relocation of some 34 miles of the Union Pacific Railroad and about 40 miles of Federal highways.

During that work, after the preliminary surveys and designs were coming fairly well along, I was sent to the Warner Hydraulic Laboratory at the Case School, of Cleveland, Ohio, where I spent three months as a resident inspector on hydraulic model testing of the various structures in connection with the dam and percolation and consolidation and permeability tests of the materials out of which the dam would be built, and so forth, and thereafter I came back to the site of the job and remained until construction was practically finished.

(Testimony of George N. Carter.)

In 1941 I went to work for the Bureau of Reclamation, [503] located at Boise, Idaho, first in charge of field investigations for the Idaho and Wyoming territory, and later, beginning with February of 1946, I was made the District Manager for the Central Snake River District for the Bureau of Reclamation. That district comprises the territory along Snake River from Bliss, Idaho, to Lewiston, Idaho, with all the tributary streams and areas in Idaho and Oregon. That is my present position, District Manager of the Bureau of Reclamation.

Q. Is the Owyhee Project under your supervision as district engineer? A. Yes, sir.

Q. Did you hold that position at the time that the North Canal broke? A. Yes, sir.

Q. Did you go to the point of the break at the time when the first breach in the canal occurred?

A. Yes, sir.

Q. How long did you remain there at that time?

A. I think I arrived there about five or six o'clock and stayed until about dark.

Q. That was on the same day?

A. That was on the same day, yes, sir.

Q. And did you leave the place of the break at that time? A. Yes, sir.

Q. When did you return to the area in which the break occurred? [504]

A. The day of the break was on a Sunday afternoon and I returned Friday morning, the following Friday.

Q. What brought you back then?

(Testimony of George N. Carter.)

A. I had been out of town in the meantime and got back to Boise Friday night, and the first news I heard was that the canal had broken again, and immediately in the morning I got up and went straight over there.

Q. How long did you remain at the place of the break at that time, when you returned?

A. I was there every day for probably a week. I know I lived with the job until the water was going safely by; how many days I do not exactly recall.

Q. Would you describe the bottom of the canal after the water had drained out from the second break?

A. I walked up into the canal through the break, and the first thing I noticed was that the bottom of the canal had cut down away below grade. That was due to the rush of the excessive velocities which took place when the canal broke.

Q. Well, could you describe the stratum—or would you describe the bottom of the canal as you saw it, the stratum, and whether there was solid material in there?

A. Getting into the canal through the breach, down clear to the bottom of the cut, there was a stratum of sandy material, as we call it, about that another stratum of rather firm bench material. I remember those two. They were both, as [505] near as I remember, below the bottom grade of the canal. Those disappeared as we might travel up the

(Testimony of George N. Carter.)

canal or down the canal. They were not visible except in the cut. That is, I did not see them.

Q. How far below the bottom of the canal did you observe these strata,—that is, the bottom as it was originally situated before the second break?

A. It has been about six or seven feet, because I could stand in the bottom and my eyes were a little below the level of the original grade of the canal where it had not been cut down.

Q. So it was six or seven feet below the——

A. Yes.

Q. Would you describe the activities that were undertaken in effecting the repair of the canal, particularly with reference to the work done on the bottom of the canal?

A. The bottom of the canal was brought back up to grade, that is, to the original level, after it had been cleaned out in through the cut, where the patch was to be keyed on, then the bottom of the canal was filled back up to its original level.

Q. Would you describe the extent that the material was cut out of the bottom of the canal?

A. As I recall, it was the maximum opposite the break and it was feathered out upstream some two or three hundred feet [506] and it feathered out downstream a shorter distance, probably seventy-five or a hundred feet.

Q. What was the character of the material that was removed from the bottom of the canal, the lowest stratum that was cut out?

A. Well, as I recall, there wasn't a great deal of

(Testimony of George N. Carter.)

material taken out of the bottom of the canal itself. There was some material removed along the inside of the lower bank.

Q. Was that a porous material?

A. It was a sort of a loblolly nature, I would call it, saturated material, clear down in the bottom.

Q. During the time of the repair did you observe the condition of the west or upper bank of the canal?

A. Yes, sir.

Q. Could you describe the type of soil and the stratum in that upper bank?

A. It was a rather firm material. It stood almost vertical. There had been some caving. It was what I would call a sound material.

Q. Now, when the canal had been repaired did you feel that—in the process of repairing the canal, rather, did you feel that it was essential for the protection of the structure to treat, to line the upper bank?

A. No, sir. I walked back and forth along there for several days and it was always under my observation and it never [507] occurred to me that it was necessary to do anything to the upper side of that canal.

Q. Have you observed this Plaintiffs' Exhibit No. 73? That is the one right back of you.

A. Yes, sir. I have seen all of them. Yes, sir, that one I have.

Q. Have you observed what has been referred to as a porous stratum in that upper bank?

A. Yes, sir.

(Testimony of George N. Carter.)

Q. In your opinion, would that porous stratum go through the bottom of the canal?

A. No, sir, I don't think it would go through the bottom.

Q. What relationship, in your opinion, then, were the porous stratum which you refer to in the bottom of the canal and this stratum here in Plaintiff's Exhibit 73?

A. I don't think they were related.

Q. Would you state the reasons for your opinion?

A. In examining the face of the cuts where the water broke through the canal, the bottom stratum, the most porous stratum of any of them, was disconnected, was not continuous; you could see it for a while and then it would disappear, and I don't believe there was any continuously connected uniform stratum across the section of that canal.

Q. When the canal was carrying a full head of water, could you state your opinion as to whether the upper bank would [508] become reservoired or saturated with water to the point that it would endanger the canal?

A. No, sir, I don't think it would. A canal can't break on the upper side.

Q. What do you think becomes of the water that enters that upper bank of the canal during the season of irrigation, when there is a full head in the North Canal?

A. Well, after the canal was filled to its normal operating stage, if there is porous stratum on the

(Testimony of George N. Carter.)

back side, the upper side, the water will gradually seep out through that porous stratum, taking whatever slope or hydraulic gradient is necessary to cause the water to flow through that particular type of soil. It will flow in that manner until its resistance—or I mean, not its resistance—until the force of gravity is finally entirely dissipated by the friction of the material, and then water will become static. Now, when that condition has been reached there may be some water—there is, of course, some water in the earth material back of the canal cut. When the canal is lowered, when the water is taken out, in the fall of the year, that water will flow back out into the canal, because water always follows the path of least resistance, and the path of least resistance is from the face, the open face, of the canal bank back down the slope into the canal prism which is empty.

Q. Have you been in the canal since the repair was made [509] during a time when there was no water in the canal? A. Yes, sir.

Q. Would you recite the condition of the bottom of the canal when water has been drained out?

A. Well, it was a normal condition and looks similar to the other parts of the canal, with the exception that I think there still remains there material which was placed in there for the backfilling, bringing it up to grade, material which was pushed off of the rim, the edge, of the cut above.

Q. What moisture, if any, did you find in the canal at that time?

(Testimony of George N. Carter.)

A. Very similar to any other portion of the canal bank,—no water or no drier.

Q. Was there water running in the canal after the irrigation season?

A. Not out of the cut, not out of the bank, no, sir.

Q. Was there any water running in there at all?

A. I didn't see any.

Q. Have you ever observed, in your work, canals similarly located on the base of a hill of this character?

A. Yes, sir.

Q. Have you observed earthen canals so situated?

A. Yes, a good many of them.

Q. Have those been in this general area?

A. Yes. [510]

Q. Was the upper bank of the canals lined?

A. Nowhere to my knowledge.

Q. In your opinion, would it have been a good engineering practice to seal the upper bank of the canal?

A. I don't think it would have accomplished anything advantageous and would be of no value.

Q. Would it have lent security to the canal?

A. I don't believe so.

Q. Would you describe the character of construction of the North Canal at the point where the breach occurred? In other words, is that a cut or a fill?

A. It is in a cut, natural ground.

Q. What is considered good engineering practice when a canal is so situated? Do you cut out an area and put in a core bank?

A. Yes, sir.

(Testimony of George N. Carter.)

Q. Do you put in a trench in the natural earth which constitutes the lower bank of the canal?

A. No, I never have seen that done. I never have recommended it nor done it myself.

Q. What is the reason for that statement?

A. The canal location being all in an excavation is in material which will hold the canal. We don't dig down 10 feet or 5 feet below the ground surface to see if there is pervious strata in there. If there is it is exposed in the [511] excavation when the canal is built.

Q. When the excavation reveals that characteristic, what is good engineering practice?

A. If any pervious stratum is encountered within the excavation of the canal prism, why, of course, some method or means would be taken to make it tight.

Q. And what do you consider to be a good practice to make the canal tight?

A. Well, there are two ways of doing it that I have in mind, both used considerably. One is a concrete lining and the other is earth lining. The earth lining may be protected with a layer of gravel to hold it in place.

Q. May I refer to Plaintiffs' Exhibit 80? You will notice that a stratum designated as porous enters the bottom of the canal, apparently with no lining between the water and that pervious stratum. Now, would you state what would have, in your opinion, transpired had water been released into the canal with that situation existing?

A. Well, that being a pervious stratum, compara-

(Testimony of George N. Carter.)

tively open and to some extent—I don't know, to that scale, what depth is represented there, but at any rate there would have been prompt seepage and percolation underneath that bank in considerable quantity showing up on the outside.

Q. How long do you think it would have taken and what do you think the ultimate result would have been had that condition [512] existed for any period of time?

A. Well, it would either have resulted in a relatively large flow appearing at the outside toe of the slope if this were open gravel, or if the flow, if the velocities were high enough, it might have started carrying out materials and have undermined the bank and led it down and it would break. Or one other thing could have resulted: If there were enough more resistance to the flow through the pervious stratum than upward, then water might have, by percolation upward and some capillary action, saturated the lower toe of that slope and caused it to slough.

Q. How long do you think that would take—assuming that action that you have described, how long would it take for a canal to breach under those circumstances?

A. Well, it could be any period of time, say from very short, a month, up to years, owing to the cross-section area of the pervious stratum and the percolation that went through it. It could be 'most anything. We have had percolation studies where the percolation through pervious material was only a

(Testimony of George N. Carter.)

hundred feet, seventy-five to a hundred feet, a year.

Q. It would depend upon the porosity of that stratum, is that correct?

A. Yes, and the cross-sectional area.

Q. If it were an extremely porous stratum how soon would you expect a canal to breach? [513]

A. Well, if it was an extremely porous stratum you could expect it to come through there in a day or within a few hours. It is all a matter of degree.

Q. It wouldn't take long if it were highly pervious?

A. No, sir.

Q. You don't think it would take eleven years?

A. That would mean a percolation rate very slow. If that were eleven years,—110 feet, it would take eleven years at 10 feet a year.

Q. Have you an opinion as to what caused the canal to break on July 14, 1948?

A. Yes, sir.

Q. 1946, I beg your pardon.

A. Yes, sir.

Q. What condition did you take into consideration in reaching that opinion?

A. The character of the formation upon which the canal was built, principally.

Q. And would you describe the character of the foundation upon which the canal was built?

A. Within the canal prism and along the bottom and the lower bank there is a stratum of rather firm, consolidated sand and some gravel, but the material is consolidated, it has stability. Further down there is another stratum of sand, to the naked eye of rather uniform size particles and does not have the [514] same degree of consolidation or cementation. What I think happens—

(Testimony of George N. Carter.)

Q. Would you state the depth of that stratum that you last described beneath the bottom of the canal?

A. About four feet, as I recall it.

Q. And now would you continue with your statement as to the premise upon which your opinion is, and your opinion as to the cause of the break?

A. What I believe happened is that water seeping down through the bottom of the canal over a period of time, whether long or short I don't know, but eventually enough water found its way into this bottom stratum to saturate it, cause it to lose its stability, its ability to withstand weight or pressure, probably getting into almost a fluid state, in which condition it gave away and the canal bank went with it.

Q. What would you consider to be good practice to guard against what you have just described? Is there any means that could have revealed that to the men in charge of this canal—the men in charge of the construction of the canal?

A. No, it is not customary in ordinary canal construction to go beneath the excavation line just to see what is down there. The canal has been designed to lay into the country far enough that it will be in original ground, so that nothing is exposed during the course of the excavation; the material appears to be reasonably tight and ordinary material which will carry [515] water without undue percolation, and that is the way it is left.

Q. Prior to the time of the break did you

(Testimony of George N. Carter.)

observe the condition of the bank of the canal?

A. At this point?

Q. At this point?

A. Yes, sir. I have been by there a few times.

Q. What did you observe at that point and in that general area?

A. Nothing at that point. It was just the normal canal section, appeared to be all right.

Q. Did you observe indications of seepage?

A. No, sir.

Q. Since the break have you observed any change in the appearance or condition of the canal bank?

A. No, it looks very similar now, the way it did before.

Q. Have you observed seepage down the bank to the toe of the canal and down to the farmer's ditch which has been described in the testimony?

A. No, sir.

Q. Did your answer in responding to that last inquiry relate to what has been referred to as the Ben Shaw place?

A. Yes, sir.

Q. The bank above the Ben Shaw place?

A. Yes, sir, the area immediately adjoining the break. [516]

Q. Would you state your observation of the point where the vegetation commences on the Ben Shaw place?

A. It is along the line of the service ditch, the farm lateral.

Q. The farmer's ditch?

A. Yes.

(Testimony of George N. Carter.)

Q. Was there anything above that that would indicate a seepage? A. No, sir.

Q. You stated your opinion as to what caused the first break in the canal. What is your opinion as to what caused the second break?

A. I think the same saturated condition existed in that bank at the point of the second break as existed at the point of the first break.

Q. Was it the same stratum to which you have referred beneath the bottom of the canal?

A. Not connected, no, sir.

Q. It was not connected. Was it at approximately the same level as the other stratum?

A. You are referring now to the other stratum,—you mean the one which caused the first break?

Q. Which caused the first break.

A. I was not in the cut at the first break. When I was there it was full of water and I did not see it exposed before it [517] was repaired.

Q. Would you state your opinion as to what caused the second break?

A. Well, the same condition existing as caused the first break, this underlying stratum down as I saw it in the second break. Some 7 feet below the bottom of the canal was a saturated loblolly unable to resist the bank load and the water pressure.

Q. Would you describe the canal along the gully, coulee, north of the break, and whether there are structures under the canal at that point?

(Testimony of George N. Carter.)

A. A few hundred feet down the canal from the site of the break there is a gulch or coulee coming down the slope. The canal goes back around and out a point to hold on grade. It has evidently seeped in that locality, because the vegetation there is indicative of seepage: Wet ground, willow growth, tules, and so forth. I don't think that there is a structure under the canal at that point.

Q. Is there a structure further down?

A. On down in the next gulch down the canal there is a cross-drainage structure.

Q. What is the object of that structure?

A. To take the surface waters which accumulate above the canal bank and conduct them under the canal without destroying the canal itself. [518]

Q. Of what, in your opinion, is a seep indicative when it appears well down below the toe of the canal?

A. It demonstrated to me a healthier, safer condition in your canal bank than if you do not have seepage. That is, if you know where there is seepage, clear water running below, that you have drainage under that leakage section of the canal bank, that hydrostatic pressures are not being built up within the bank, bringing up the line of saturation and percolation so that eventually there is a blowout and a slough and you lose your canal bank.

Q. Not a sign of danger to your canal bank?

A. To me it is a sign of safety when you have clear water drainage underneath the canal bank.

(Testimony of George N. Carter.)

The Court: Well, it didn't work out in this instance, did it?

A. Well, there are no indications at this site of any seepage material that prolonged up the canal bank or down the canal bank.

The Court: There is clear water running out up above, a condition that has continued for a long time.

A. Yes, sir, and to me that is indication of safety.

The Court: Well, but the bank did break there.

A. Yes, broke here, where, so far as I can discern from what I have seen afterwards, there was no seepage. In other words, the water was trapped and impounded in there and that filled [519] up the saturation and caused the soil to lose its stability and ability to resist force.

The Court: Well, I don't just exactly see the logic of your position and, if you can, explain it to me. Here there is a seep up above that you don't know the source of, and there is testimony as to the seep around and above the particular piece shown in 82 here, and you attribute one to the farmer's lateral and you don't know where the other came from, and still you say that is a healthy sign and still you have a break. Now, don't you think that there is some connection? Don't you think that perhaps you might have paid some attention to that?

A. I think if there might have been a well-developed seepage at the site of the break which had been known for several years that the break

(Testimony of George N. Carter.)

might have occurred at that point. In building dams, somewhere along the lower third of the base you put in systems of drains—I worked on a very large dam where we had a complete drainage system about the downstream third, and the purpose of that was to take any water out freely, any water that found its way through the upstream portion of the dam.

Now, I know of another dam over in Idaho that did not have drainage, free drainage, but it did have leakage from the upper side, and that dam finally saturated on the downstream side and we became worried about it and we went [520] in there and put in drainage to assist that water after it got part way through the embankment, but we did not get enough of them in and eventually the dam went out, and that was a dam that did not have drainage.

I know of another dam over in Idaho that has a terrific amount of drainage through the foundation and that dam is perfectly safe.

The Court: In other words, you will not accept testimony here that there was any seepage below?

A. There could not be any material amount, because there's no indications of it. There is no willow growth or any wet ground such as is seen up there in that gulch. That is what I see as an indication of safety, willow growth and cattails, and such as that.

The Court: There were some willows above the farmer's ditch.

A. Just a very little spot.

(Testimony of George N. Carter.)

The Court: And you do not accept the testimony that there were places—in this testimony here—where this wash was where they sank a Caterpillar when the farmer was trying to plow?

A. Well, I didn't see it, but there was testimony that the cat bogged down. I believe it bogged down.

The Court: Don't you think that indicates some seepage right in front of your break? [521]

A. That was below the farmer's ditch and that could have come from irrigation or seepage out of the farmer's ditch.

The Court: In other words, you disregard anything that does not fit in with your theory?

A. Well, I have my theory, what there was of theory and the rest facts, all developed in my mind before I heard of any of these things, and that doesn't change my opinion.

The Court: In other words, you would roll a rock down a mountain if it was too high to suit your theory?

A. No, it just won't square with the conditions as I have seen them on the ground. I think a canal bank in which some water, a small amount, is finding its way into the bank and not finding its way out on the lower side, then is when a dangerous condition is set up which may lead to a break.

The Court: And you don't think that these structures on the hillside were of that type?

A. No, sir.

The Court: All right, go ahead.

Q. (By Mr. Veeder): Are you acquainted with

(Testimony of George N. Carter.)

the seep area on the Hust place, which is directly south of the canal, from the area marked on Plaintiffs' Exhibit 82? There is a seep area there, is there not? A. Yes, sir.

Q. Would you describe that area, as to what is transpiring there now and the character of the growth? [522]

A. When I examined it there was a small amount of water running out of a rather irregular place in the ground, maybe larger than this table, and growth around it—I think it is hayfield or pasture—As I recall, there is nothing but hay growth around it.

Q. Is that the condition existing below the farmer's ditch?

A. Yes, sir, it is down the irrigated field.

Q. What is the condition of the canal above the farmer's ditch? Is there seep area there?

A. Not that I ever saw.

Q. Have you ever observed any seep condition on the bank of the canal above the Hust place?

A. No, sir.

Mr. Veeder: That is all. You may cross-examine.

Cross-Examination

By Mr. Lytle:

Q. You state that the second break was caused from the same reasons that the first break was caused, which was the result of saturation of materials in the bank. Couldn't that have been de-

(Testimony of George N. Carter.)

terminated by testing the materials before repair following the first break?

A. Yes, sir, it could have been.

Q. And it was not?

A. But it was not, that is right.

Q. Now, where did you first look for seep indications on the [523] Shaw place?

A. Well, I wasn't looking for seepage in particular, but during the period of repair of the second break I walked all over that place half a dozen times or more, and I was watching the wash particularly, the gash that was cut in the ground by the heavy flow of water. I was looking for drainage, for seepage, coming out anywhere in that gash clear down the hill, and there was a very small amount and I watched that from day to day. I had a little measuring device there so I could tell how much was coming out, comparatively, and it was so small that during the hot part of the day when the wind was blowing there was no flow over this little notch that I had built. In the cool of the evening or in the early morning there was very small flow over that notch. Now, that was all the seepage I could find in that field.

Q. And that was down in the wash disclosed in the Plaintiffs' Exhibit 69?

A. Yes, sir. In 75, down about midway from the upper end of it to where it stops at the bottom of the picture.

Q. And at that time there was no water in the canal? A. That is right.

Q. Now, this farmer's ditch on the Shaw place

(Testimony of George N. Carter.)

is just a short distance below the toe of the outer bank of the canal? A. That is right.

Q. About how far, would you say, Mr. Carter?

A. Oh, it is variable. In some places——

Q. I appreciate you did not measure it.

A. What is it?

Q. I say I appreciate you probably didn't measure it, but give us an estimate.

A. I would say in some places it was 5 feet and in other places it was maybe 20 feet away. It didn't exactly follow the toe of the bank.

Q. Now, if it appears that it was testified in this case that at a time when the head was turned off, when this lateral was closed and no water coming from the canal into the ditch, there were at places in this farmer's ditch live or flowing water, where would you say that came from?

A. Well, I wouldn't know. Let me see if I understand you. No water, there hasn't been any irrigation in the farmer's ditch for some little time?

Q. Yes.

A. Water is out from the main canal?

Q. No, water is in the main canal.

A. Oh, water is in the main canal.

Q. But the headgate in this ditch is closed, so it is receiving no water from the regular source of supply, and there is at places in this ditch live or flowing water. Where would you say that came from?

A. Well, the logical conclusion would be that it was coming [525] from the canal bank—can't

(Testimony of George N. Carter.)

attribute it to any other source, under those conditions that you describe.

Q. Yes, and if that continued over a period of time it would indicate a continuous seepage from the canal?

A. Yes, sir, under the conditions you have stated, it would.

Q. Now, the testimony in this case discloses that the area included in Plaintiffs' Exhibit No. 82 was in such seepy condition, such an excess of moisture, that the hay could not be harvested in the usual means, that they had to carry the hay off by forks rather than by machine or by horse power, that water would gather in the horse tracks or in the wheel tracks of the wagon and in the tracks made by the tractor. That would indicate a rather serious seep condition, would it not?

A. Yes, sir, it would indicate that there was a lot of moisture in that soil if that happened.

Q. That would indicate a condition much more dangerous than the condition where the water is coming out in a free flow and clear water?

A. Unless that condition were some distance away from the canal. If it were some distance away from the canal I would still think it would be safe.

Q. Will you look at Exhibit No. 82.

A. Which is Exhibit No. 82? I don't see a number.

Mr. P. J. Gallagher: That one right there. [526]

A. This one right here (indicating)?

Q. (By Mr. Lytle): There is a scale on that

(Testimony of George N. Carter.)

exhibit which says what the scale is.

A. Fifty feet, one inch.

Q. Well, the distance indicated there of the seeped area of the farmland would disclose it to be about how far from the canal?

A. Is this the outline of the seeped area (indicating)?

Q. Yes, sir.

A. Well, I estimate that is about 75 feet, in general, along there.

Q. And isn't that close enough that a seepage of that extent would indicate a rather serious condition?

A. No, sir, I don't think so, that far away.

Q. You think that would give the farmer reason to believe that he was in a zone of complete safety?

A. So far as the canal was concerned, yes.

Q. Yes. And if the seep from the main canal there was in sufficient quantity that it furnished flowing water for the farmer's ditch, wouldn't that represent a much more serious situation than the situation of the free flow that you describe?

A. Yes, that is seepage closer to the toe of the canal bank, but on either side of this break there has never been any sloughing of the bank. There is no indication that the line [527] of saturation is creeping up the embankment, and so long as the line of saturation does not creep up above the original ground, the normal ground level, there isn't much danger of sloughing.

Q. Or breaking?

(Testimony of George N. Carter.)

A. No, no break at that point.

Q. But it did.

A. It broke underneath, I think.

Q. Now, when you examined the bottom of the ditch, or, rather, the area below the ditch, below the bottom of the ditch, after the break, you found, I believe, a type of sandstone or sandy formation?

A. Yes, sir.

Q. Quite consolidated. Now, did that connect?

A. Well, there were two in there. The lower one, the least consolidated, was down at least some foot below the bottom of the canal.

Q. Yes.

A. I mean 7 feet below the bottom of the canal, a foot below the level of my eyes; that is where it was.

Q. And what was the depth of the other stratum below the bottom of the canal?

A. That laid on top of this lesser consolidated stratum.

Q. That is, the second stratum from the bottom was the most consolidated? [528]

A. Yes.

Q. Now, was that on a flat or an inclined plane?

A. As I remember, it had some inclination, some dip.

Q. That inclination was toward the valley?

A. Yes.

Q. Now, seepage from the canal following that stratum down toward the farmlands might have a tendency to appear at a greater distance from the canal than it might otherwise?

A. Yes, sir.

(Testimony of George N. Carter.)

Q. Which would account for that seepage not showing up on the uphill side or west of the marked portion on Exhibit 82?

A. Yes, sir, I think that would be true.

Q. Then it is your judgment that the first break came in the bottom of the canal?

A. Below the bottom of the canal.

Q. Yes.

A. I think it gave way below the bottom.

Q. Yes. In other words, this loblolly underneath the canal sloughed out and the whole thing gave way? A. Yes.

Q. And the whole thing was resting on a rather highly consolidated sandstone on an inclined plane downward toward the valley? A. Yes, sir.

Q. Was there anything about the terrain, the surrounding [529] country, that might have indicated that condition to exist at that point?

A. No, not that I am aware of.

Q. I call your attention to Plaintiffs' Exhibit No. 70. Did you observe the condition shown in that picture in the area reasonably close to the area of the break?

A. That is the gulch down the canal from the break, where there is vegetation?

Q. Yes; I am talking about the upper hillside and the out-croppings.

A. No, sir, I didn't pay any attention to those or attempt to connect them up with what happened within the canal prism.

Q. You say that after the second break the bottom of the canal was brought up to normal grade?

(Testimony of George N. Carter.)

A. Yes, sir.

Q. Do you know whether that was true of the repair following the first break?

A. No, sir, I don't know. I wasn't there.

Q. You weren't there, but have you checked any records or files to inform you on that subject?

A. No, I have not.

Q. You did not?

A. I did not inquire.

Q. Would you say the west or mountainside bank of that canal at the point of the break and as shown in Plaintiffs' Exhibits [530] 73, 74 and 77—

A. Pardon me, if you had a question I was concentrating on the exhibits and I did not get the question.

Q. Well, Mr. Carter, I am not so sure I completed the question. Would you say that the soil on the mountain side or up side bank of the canal as shown in Plaintiffs' Exhibits 73, 74 and 77 disclosed strata, for the full height that your water level would reach in the canal, of material impervious to water?

A. Is the upstream bank of the canal impervious out to the water line? Is that your question? Or from the water line on down?

Q. Down. I brought it up, but we will take it down.

A. I think there is some impervious material below the water line, sure there is.

Q. Now, would you say there is some pervious material below the water line and above the bottom of the canal?

(Testimony of George N. Carter.)

A. Yes, there are some pervious materials in there also.

Q. Now, were any tests made to determine whether the part of the bank that was permeable extended below the bottom of the canal?

A. Not that I know of.

Q. If it did extend below the bottom of the canal, then water seeping in and percolating into the mountain side of the canal could seep down below the bottom of the ditch, could it [531] not?

A. Yes, sir, it could go down if the pervious stratum continued.

Q. Would you say it would be good engineering practice to build a canal through an area the banks of which disclosed it to be subject to percolation without determining whether or not that area extended below the bottom of the canal?

A. Why, I think our reconstruction there has demonstrated it, because the entire area below now is hard and dry.

Q. Just a minute. Now, when you made the repair following the second break how deep did you go with the trench or key slot in which was left the core?

A. If I recall, it started about on the bottom elevation of the break and continued——

Q. Pardon me, I didn't get that. The bottom elevation of the what?

A. Of the canal at break, after it was broken—and extended down the canal until we reached the end of that poor material.

(Testimony of George N. Carter.)

Q. You started your core at the bottom of the break in which you stood when you went up there, and the bottom of the canal was 6 or 7 feet higher than you?

A. I am not too certain of the elevation at which that stuff was dug out, but it was somewhere of that elevation.

Q. So at that point the key slot for your core was down into this consolidated sand? [532]

A. Yes, sir. In other words, what we were doing was to remove all of the saturated weak material and after we had done that we backfilled it with good material.

Q. Yes; and also what you were trying to do with that core was to cut off seepage in that lower area, wasn't it?

A. Yes, sir.

Q. And that would account for the fact that the area below is no longer seeped, if it is in fact no longer seeped?

A. Yes, sir, provided the water seeping into the upstream bank did not go below the bottom of this core trench and then go on down the bank. Whether it does or not I don't know.

Q. So that your core now is down there at 6 to 7 feet below the bottom of the canal?

A. Yes, sir.

Mr. Lytle: That is all.

Redirect Examination

By Mr. Veeder:

Q. Mr. Carter, would you explain the phenomena

(Testimony of George N. Carter.)

of seepage in as far as the manner that it relates to the particular point where the water surfaces? Does it indicate that the seepage is from the point directly opposite from where the seep arises?

A. No, sir, it may be some distance away laterally. We have searched for those seeps and we do not find them directly opposite their point of emergence from the ground.

Q. In your experience as an engineer and observing large [533] projects, have you ever encountered what they call drainage ditches?

A. Yes, sir.

Q. What is the object of those drainage ditches?

A. To intercept the ground water table, draw it down into the rainage ditch and lead it away to some river or some other channel.

Q. It intercepts, in other words, ground water which would not come to the surface for some distance?

A. Yes, sir.

Q. Now, the farmer's ditch is located below the toe of the canal, is it not?

A. Yes, sir.

Q. Could it not be that that ditch would intercept seepage coming down the canal and coming down from the canal from any spot from where the canal might be seeping and act, in effect, as a drainage ditch itself?

A. Yes, sir, that is true.

Q. Would that not explain the possibility of live water in the farmer's ditch?

A. Yes, sir, that explains it exactly.

Q. What is the effect of seepage on crops?

A. Too much seepage, too much ground water,

(Testimony of George N. Carter.)

limits the growth and eventually kills the growth of ordinary marketable crops.

Q. What is the effect of heavy seepage which would cause a [534] Caterpillar tractor to become stuck?

A. Well, if that would continue for any long period of time there would be willow and tule growth in there.

Q. Well, what would it do to a crop of clover that was growing in there?

A. I would think it would yellow it and kill it.

Q. Kill it out? A. Yes, sir.

Q. What would be the effect on the harvesting of a crop of so bad an area?

A. Well, there wouldn't be any crop to harvest if it proceeded for any length of time.

Q. It would kill out the crop? A. Yes, sir.

Q. What does it reveal, in fact, if there was in fact a crop taken off of this area, Plaintiffs' Exhibit 82, which you saw?

A. Well, it would indicate to me that very recently there has been water on the surface; maybe it had been irrigated, or if this were seepage it had come in very recently and it hadn't killed the alfalfa crop.

Q. It hadn't been prolonged seepage at that point?

A. Alfalfa will not live in waterlogged land.

Q. Is that true with respect to clover or other crops?

(Testimony of George N. Carter.)

A. So far as I know, all crops will wither and wilt if there [535] is too much water on it.

Q. Have you investigated on the Ben Shaw place, and particularly the area on Plaintiffs' Exhibit 82? Have you observed the type soil on that land?

A. Yes, sir.

Q. Have you observed the stratum directly beneath it?

A. Yes, sir.

Q. Would you describe that stratum?

A. It is—As exposed in the wash it is what I call hardpan.

Q. Would you characterize hardpan, so far its imperviousness is concerned?

A. It is impervious, very impervious, to the penetration of water.

Q. Suppose that an area underlain with hardpan were irrigated, explain what would happen to the water that was spread out on the land.

A. If the percolation was downward all of that water would be stopped by the layer of hardpan, and then its only source of movement is to flow downward on the contact along the hardpan.

Q. It stays on top of the hardpan?

A. Yes. We have that trouble where——

Mr. P. J. Gallagher: If the Court please, this is not redirect. We object to it on that ground. Nothing about the Ben Shaw crops. [536]

Mr. Veeder: If your Honor please, counsel has covered the matter with respect to the crops and with respect to the seeped area, and inquiry was

(Testimony of George N. Carter.)

made as to the situation on the seeped portion of Plaintiffs' Exhibit 82.

The Court: All right, don't take too much time. Go ahead.

Q. (By Mr. Veeder): Would you explain again the effect of irrigation or seepage from the farmer's ditch upon the topsoil in the area appearing on Plaintiffs' Exhibit 82?

A. As the water is applied to the surface of the land its percolation is naturally downwards and will continue downward so long as it is not intercepted. In a condition existing as exposed on the Ben Shaw place the percolation downward will be but a short distance when it is stopped by this layer of hardpan; then the only source of disposal of the water is either flowing downward, downhill, along the hardpan on the contact, or if it can't escape that way it will rise up and stand on the surface. In this case the surface slope is too steep for the water to stand. We have that trouble in irrigation of relatively level lands. Where there is hardpan within a foot, or too close to the surface, the water will not penetrate and we have trouble with the land.

Q. Have you observed recently whether there is a crop on that land at the present time?

A. There is some crop remaining from other years. There is [537] alfalfa to the south, and the rest of it has scattering spots of clover, and the rest of it is grown up to cheat grass.

Q. What is the condition of the land now so far as seepage is concerned?

(Testimony of George N. Carter.)

A. It is all dry and hard every place that I looked.

Q. Did you investigate the area?

A. I went, yes, pretty well down to the end of the wash and circled back on around to the north of the fill.

Q. Would you please refer to Plaintiffs' Exhibits 73 and 77 and observe the formation immediately to the right of the figure standing with the rod.

A. On 77, you mean?

Q. Yes, that one.

A. Now, what is the question, please?

Q. Would you explain the apparent loose earth right there in the bottom of the canal which extends upward along the upper bank?

A. The material now present in the bottom of the canal is largely material that was 'dozed off of the hill up above here. That was 'dozed off and spread along the bottom and leveled off to a certain extent, but not completely. Some of it was left lying up against this slope along here, and what I think this broken material on top is is other material which has been scaled and sloughed off on this slope along here (indicating). [538]

Q. What, in your opinion, is the source of the greater part of that filled-up area to which you refer?

A. It was pushed off of the top of the hill and into the canal purposely.

Q. Does the same situation exist with respect

(Testimony of George N. Carter.)

to the comparable area as appearing on Exhibit 73?

A. Yes, sir, it is the same condition.

Q. How far was that work carried on up the canal, that drifting of material off the upper bank?

A. From the point of the break it was drifted off three or four hundred feet upstream for the purpose of filling the bottom of the canal, and then from there on up a considerable distance more silt and fine soil was 'dozed off into the canal for the purpose of silting it, tightening it up.

Mr. Veeder: That is all, thank you, Mr. Carter.

Recross-Examination

By Mr. Lytle:

Q. Does that drift of soil as shown in the bottom of Exhibits 73 and 77 show there in the condition that it was when it was purposely pushed down over the mountain?

A. No, it has a little different appearance now. It has been worked by water and I think there has been some caving along there, too.

Q. Yes.

A. It was left in a smoother appearing condition than that. [539]

Q. Just smoothed. It was smoothed out quite considerably, so as to silt the bottom of the canal and the lower side?

A. Yes, to silt and to fill, raise it up to original grade.

Q. Yes; so that, as a matter of fact, most of that is slough from the bank, is it not?

A. There was some left lying up against the

(Testimony of George N. Carter.)

slope, and there is some slough on top of it, I think, in its current condition.

Q. And that same condition is disclosed of the sloughing in Exhibit 71? A. Yes, sir.

Q. As evidenced by those sort of halfmoons along that upper bank?

A. Those are sloughs in those places along there, yes, sir.

Q. And, regardless of the topsoil and hardpan, when you looked at that crop on the Shaw place it was showing yellow in color, was it not?

A. Yes, from drouth, I think.

Q. And it shows yellow in color from seep as well? A. Not this summer, no.

Q. I am asking if the same color is not disclosed by seep?

A. No, it doesn't have exactly the same appearance.

Q. I am asking about the color, Mr. Carter.

A. That is it, the color. An alfalfa plant which is yellowing from lack of water does not have the same appearance as one that is yellowing from too much water. [540]

Q. You mean the shade of yellow?

A. Yes.

Q. Mr. Carter, what is the size of this farmer's ditch along the head of that piece of ground?

A. Oh, it is a foot and a half or maybe two feet on the bottom, variable in width, the bank a foot to a foot and a half high, enough to carry, I would estimate, maybe a second-foot of water.

(Testimony of George N. Carter.)

Q. Then when it was not receiving water through the headgate out of the canal but was receiving water through seepage from above it, it was acting as a sort of a drainage canal to carry part of that seep water away from this ground, wasn't it?

A. It could do that, yes, sir.

Q. Well, I understood you to have it doing that when you were being examined by Mr. Veeder.

A. Yes; yes, that is what I mean.

Q. So that in addition to seeping the ground below it is also carrying away part of that seepage water?

A. You mean carrying it laterally and longitudinally along the canal?

Q. Yes.

A. Yes, sir, to the extent of the flow.

Mr. Lytle: That is all. [541]

Further Redirect Examination

By Mr. Veeder:

Q. May I have just one more question? Does that sloughing—What is that sloughing indicative of? Does it indicate a danger to the canal?

A. No, it is not a danger. If carried to a sufficient degree it will decrease the capacity.

Mr. Veeder: That is all.

The Court: That is all.

(Witness excused.)

The Court: The Court will recess.

(Short recess.)

Mr. Hess: Call Mr. Grant Gordon. [542]

GRANT GORDON

was thereupon produced as a witness in behalf of the defendant herein and, having been first duly sworn, was examined and testified as follows:

The Clerk: Grant Gordon.

Direct Examination

By Mr. Hess:

Q. Your name is Grant Gordon?

A. That is correct.

Q. Where do you reside, Mr. Gordon?

A. I live in Boise, Idaho.

Q. What is your age? A. Forty-two.

Q. And will you please give your educational qualifications?

A. I graduated from the College of Idaho in 1926 and took some postgraduate work at Stanford University in 1930.

Q. What degree or degrees did you hold?

A. I took the degree of Bachelor of Science from the College of Idaho and have full graduate standing in the Stanford School of Engineering.

Q. And when did you take your degrees, in engineering?

A. I took some post-graduate work in Stanford in 1930.

Q. And what work have you had since that time in the field as an engineer?

A. Well, since 1927 I have been employed by the Bureau of Reclamation continuously, except for the approximately six [543] years I was in the

(Testimony of Grant Gordon.)

Army. I started out in the Boise Project on topography and service in connection with the location and construction of canals on the Black Canyon Project in the fall of 1927. In the winter of 1927 I worked in the Boise office, helping to compute the excavation quantities and make paper locations of the canals that were built on the Black Canyon.

In the spring of 1928 I was again in the field on canal location on the Black Canyon Project.

In the summer of 1928 I served as instrument man on the location of the Deadwood Road, which is the road leading into the Deadwood Dam over in Idaho.

In the fall of '28 I was again on the canal location on the Black Canyon Project, in charge of the party. In the winter of '28, again in the Boise office, working up the notes that had been taken on the Deadwood Road and preparing plans and specifications for that road construction.

In the fall and winter of 1928 and the spring of 1929 I was in charge of some drainage investigations on the Boise Project and supervised the operation of two draglines in the construction of drains. In the summer of 1929 I was inspector and engineer in charge of the construction of the Deadwood Road, some nine miles of Forest Service type highway construction down the Deadwood River. In the fall of 1929 I went on the actual construction of the Deadwood Dam as an inspector. [544]

That winter, the winter of '29 and '30, I attended a quarter at Stanford University. In the spring of 1930 I again went to the Deadwood Dam and was inspector on one shift during the entire con-

(Testimony of Grant Gordon.)

struction of the dam, which was completed in the fall of 1930.

I was transferred then to the Owyhee Dam and was a shift inspector on the construction of the Owyhee Dam from a point about at the river level until the dam was nearly completed. I served on that job for about ten months. Was transferred for a short time to the Sheep Valley Dam, near North Power, Oregon; was there about two months, at which time I supervised the development and testing of the aggregate pits, the detailing and bending of the reinforcing steel for an Anderson-type dam.

In the late fall of 1931 I was transferred from Sheep Valley to the Cle Elum Dam and was there until the fall of 1933. At Cle Elum Dam I was in charge of the earth and concrete aggregate laboratory and I performed all the tests on earth and earth fill which went into the dam and the concrete materials, supervised the operation of the concrete construction plant, and did some of the inspecting on the placing of the fill and the grouting in of the outlet conduit.

In the fall of 1933, as the Cle Elum Dam was completed, I was transferred to Coulee Dam in Washington, served there for seven years. The first two years I was Chief [545] Inspector and I had charge of the construction of the camp, which included the buildings, the warehouses, the administration buildings, the schoolhouse, the water and sewer systems and streets and access roads and highways, the sinking of two piers for the founda-

(Testimony of Grant Gordon.)

tion for the bridge across the Columbia River, the search for a development of concrete aggregate sources for the dam, the diamond drilling, the foundation exploration for the foundation for the dam, as well as supervision of the contract for the preliminary excavation on the dam.

When the main contract for the dam was let I was made responsible for the preparation and treatment of the foundation on which the dam set and had charge of geological investigations on the entire Columbia River-Coastal Project. This included the supervision of some five diamond drill rigs. We sunk exploration shafts and drove exploration tunnels on the South Coulee damsite, we searched for and developed the aggregate sources and supplies for both the North and South Coulee dam. All this time I was responsible for actual foundation preparation operations on the main dam. The work came under the treatment of various series slides. I maintained and supervised the operation of a laboratory which was testing and sampling earth materials, concrete aggregate materials, pozzuolanic materials.

I filled that position until I joined the Army in 1940. I entered the Army in September, 1940, was in it nearly six years.

Q. Now, what department did you go into in the Army?

A. I was commissioned in the Construction Division of the Quartermaster Corps first, and in 1942 was transferred to the Corps of Engineers.

(Testimony of Grant Gordon.)

Q. All right; and what was the type of the work performed by you or supervised by you while you were in the Army with the Engineers?

A. I was in charge of the construction of the 41st Division Cantonment at Fort Lewis and some other buildings there, a sum total of some five thousand buildings, together with about 500 miles of paved highways, water and sewer installations.

In the fall of 1942 I was transferred to Great Falls, Montana, as Area Engineer for the State of Montana. There I had charge of the completion of some five major airports and some lesser installations. The job there involved the investigation and design and construction of airport runways, hangars, heating plants.

In the spring of 1943 I was transferred to the Olympic Peninsula as Area Engineer in that vicinity. There I had charge of the design and construction of several major airports, some six seacoast batteries, running up to 16-inch, some 40 or 50 miles of primary highway, fifteen or sixteen [547] cantonments, several hundred aircraft warning stations, and other installations for the control of seacoast defense, as well as a large number of secret installations.

From Great Falls in 1943 I was transferred to the Seattle office, to the District Engineer's office in Seattle. For eight months I was Chief of the Construction Division there, in charge of construction within the Seattle District, which included Oregon,

(Testimony of Grant Gordon.)

Washington, Northern Idaho, Montana, and a considerable amount of construction in Alaska.

Following that duty I became Chief of Operations in the Seattle District Engineer's office and held that job for about a year. During that time I was sent to Fort Leavenworth, where I graduated from the Command and General Staff School, came back to the Seattle office and resumed that job as Chief of Operations for a month or so. Then in February of 1945 I became Chief of the Engineering Division in that office, in which position I had charge of all engineering design and specifications for the District, both civil and military.

In February of '46 I was mustered out of the Army as Lieutenant-Colonel.

Q. Did you have anything to do with the preparation of the Boeing airfield?

A. That is correct; I had charge of the investigation, design and construction and extension to their existing [548] runway and some 70 acres of parking apron for the B-29s, the big boys, together with landing facilities and some rather large-size hangars, and these were particularly tough jobs, because the field is at tide level and the foundation is all tide flats, requires stabilization and some drainage, and some piling in some cases and filled by compaction in others. A very tough soil mechanic's problem. It required investigation and very detailed laboratory investigations.

Q. Well, after your Army experience generally, where did you return?

(Testimony of Grant Gordon.)

A. I came back to work for the Bureau of Reclamation in Boise and I was assigned to the Owyhee Project to construct a waste-way, a project which was later changed. It was during that time that the break occurred.

In the fall of 1946 I was transferred to the Regional Office and I have been there ever since, and I am now Regional Engineer for the Region I.

Q. Were you present at or immediately following the break of the North Canal on this project and, if so, when did you arrive there and who was there when you got there?

A. I first saw the break in the North Canal on about the 15th of July, the day after the break. That was Monday morning. When I arrived at the site of the break Mr. Spofford and several of his men were there and examining the site of the break. [549]

Q. Who is Mr. Spofford, so he can be identified here?

A. He is the Irrigation Manager for the Bureau of Reclamation and in charge of operation and maintenance for the Owyhee Project.

Q. What equipment, if any, was on the ground, or what men were there?

A. He had several of his operational maintenance crew on the site and had started the mobilization of equipment for the repair of the break, and some time during the forenoon their first dragline and several of the trucks went to work on the production-of-gravel operation.

(Testimony of Grant Gordon.)

Q. Could you at that time, at the time you got there, get down into the bottom of the canal and work in the canal to repair the break?

A. It was not possible to get down into the bottom of the break. It was still flowing a heavy volume of water through the break and down the hill. It was not possible to do any work in either the canal or on the break.

Q. Just describe what you did there in connection with Mr. Spofford in mobilizing this work and how soon you got into the canal for the purpose of repairing the break.

A. Well, I discussed with Mr. Spofford the equipment which he had already contracted for and had mobilized. He had already contracted for two D-8 'dozers——

Q. Now, who was in charge of those 'dozers?

A. Well, in the actual repair of the break I was, personally.

Q. Well, but who owned the 'dozers that he had contracted for?

A. One 'dozer was owned by Clowers Brothers and the other was owned by Mr. Terhune.

Q. Mr. Terhune was the gentleman who testified in the case?

A. That is correct.

Q. And how many trucks were on the job in the repair of the first break and handling of the rock material that was needed for your supply of gravel?

A. There were from five to seven dump trucks, as well as several service trucks, flatbeds and pickups.

(Testimony of Grant Gordon.)

Q. Now, generally, in the repair of the break did you have sufficient stock pile in sufficient quantity to keep the work going at all times after you had prepared the bed of the canal? Did you or did you not?

A. The area within the break was relatively restricted. We had all the equipment that we could use to an advantage in the repair of that break, as to the bulldozers and the earth-moving equipment on the break and the trucks and shovels that were used to deliver aggregate to the site of the break.

Q. Now, if you will, just describe to the Court the nature of the break and just what you proceeded to do.

A. The break was about 15 feet wide on the bottom and about [551] 50 or so feet wide on the top, and when I saw it it had eroded to a depth of some 7 feet in the bottom of the canal from the erosive effect of the draining water. The first operation which we began was to square up the bottom of the canal, both upstream and downstream of the break, stock-pile the material which we took out in that operation just outside the break for re-use in the repair. We beveled the upstream and downstream abutments of the break to receive the patch and to key the patch to the existing bank. We dug two cutoff ridges across the site of the break parallel to the axis of the canal, backfilled the trenches and the break itself with a mixture of the materials which had been stock-piled from the bottom of the canal and some imported gravel, pit-

(Testimony of Grant Gordon.)

run gravel, as far as the material which had been removed from the canal held out. When that material was used up we imported material from the excess piled along the banks of the canal upstream and downstream from the break. The material was mixed, blended, compacted by the operation of the tractors themselves and such other equipment as was working across it. It was sprinkled where necessary and made a very dense, compact fill.

Q. Would you take the pointer and approach the map—or approach the model,—let's see, that is our No. 53. Would you take that pointer and point out on your model where that first break occurred. Go ahead and explain it, now, what you found and what you did in your operation. [552]

A. By removing this large piece which is colored red, the pieces in the bottom of the canal, which should include this piece that I am now pointing to, represents the condition of the bank at the time of the first break. To key the patch to the existing banks we cut off the areas colored red as indicated on the model. These beveled cuts sloped both upstream and downstream and toward the canal section, so that the weight on the patch would tend to seat it solidly on the existing canal bank.

We dug two cutoff trenches in the bottom and up the sides of the existing canal banks,—Due to mechanical difficulties, I have only shown across the bottom here, but the trenches were dug up the isde—and backfilled this entire area with selected blended material.

(Testimony of Grant Gordon.)

Q. State whether or not you removed all the soft material from the banks and from the bottom of the canal.

A. We did. We cut into the upstream abutment of the existing canal—or upstream abutment of the break, with the 'dozers squared up the corners until we were into firm, hard material. We cut into the downstream abutment of the break with the 'dozers somewhat further than we did on the upstream abutment, until we were certain that we were into firm, sound material. We also squared up the bottom of the canal to improve the hydraulic qualities and to prepare it to receive additional fill material from the top. [553]

Q. If you will take the seat now. Then in the operation after you had—Well, what did you note in the bottom of the canal?

A. It was a sandstone formation, made up of many layers of varying thickness. The eroded surface was stepped from a point opposite the break some 7 feet deep up to the normal bottom grade of the canal, some 350 feet upstream and approximately 100 feet downstream from the break.

Q. State whether it was porous material or otherwise.

A. The material appeared to be very tough. The erosion from the waters had loosened some of the layers by undercutting and we removed these layers to get a good bond with our backfill material.

Q. State whether or not at either end of the

(Testimony of Grant Gordon.)

break solid material was obtained for your foundations on both ends of the lower bank.

Mr. P. J. Gallagher: We suggest that is very leading and suggestive, your Honor.

The Court: Yes, I think it was.

Mr. Hess: Withdraw the question.

Q. State to what point or points you dug your core trench for the placing in of your materials and the preparation of your bank walls before placing the materials in.

A. We dug the core trench across the bottom and up both sides of the break into what we determined to be sound material. [554] We cut away material at the water site on each abutment of the break with the cats until we were in firm material, and in addition the cutoff trench on the downstream abutment was cut with a dragline with a yard-and-a-half bucket,—We dug the cutoff wall up the face of the abutment of the break.

Q. Now, as to the bottom of the canal, how far did you go relative to soft materials?

A. The soft materials in the bottom of the break were entirely removed. The material on which we started our cutoff wall was sound and hard, and we dug into that material some 3 feet with a trench that was approximately 3 feet wide.

Q. How far under the floor of the canal as normally existed before the washout was this first stratum of this porous material which you describe?

A. Well, in the first break there was no soft material visible. The materials that were left there

(Testimony of Grant Gordon.)

by the eroding waters were sound and firm and looked tight. We——

Q. What do you mean by “tight”?

A. Watertight.

Q. All right. Now, if you will just describe to the Court the repair that you were making on the bank and what happened there prior to the second break.

A. About some time Wednesday morning, nearly noon, we had brought the repair in the first break up to the point where we could see that we were in position to receive some water [555] that evening. I discussed with Mr. Spofford the advisability of allowing a small flow of water to pass the break and told him that I considered that it would be possible to pass a small flow of 20 second-feet of water past the break. About six or seven o'clock that evening we had the repair of the break up to approximately the normal elevation of the normal high-water line of the canal. I checked the elevation with a level to make sure. At about eight o'clock in the evening of Wednesday I cut the cofferdam which had been placed about 350 feet upstream of the break to allow a flow of water past the break. The cofferdam was filled at least up to or slightly above the normal high-water line in the canal. I cut through the cofferdam a depth of about a foot and a half to admit water past the cofferdam, but the cofferdam went out rather quickly. It was built out of fine materials. The water went out in the canal. Shortly after it had

(Testimony of Grant Gordon.)

been allowed down the canal the first patch overflowed, a flow of water of some——

Mr. P. J. Gallagher: Would you read that last sentence there? I didn't get it.

The Court: No, no. Just go ahead. You can get it out of the record afterward.

A. There was a flow of water about an inch deep, from one to two inches deep, over a portion of the patch.

Q. (By Mr. Hess): What portion would that be?

A. It was the downstream, the extreme downstream portion [556] of the patch was overtopped first. That flow of water washed about three inches of loose material from the top of our patch. That was material which could not be normally compacted by the operation of our equipment. There was only a certain amount of loose material on top.

The cat owned by the Clowers Brothers was located downstream of the patch, on top of the canal bank. The cat belonging to Mr. Terhune was parked below the canal bank. I had excused him and was planning to send him home. He had been on the cat some sixteen hours already that day. When the patch overtopped I asked the Clowers cat to go back upstream. He came upstream carrying a 'dozer-ful of material, expecting to stop the overtopping, but it was obvious that that was not the quickest way to overcome the difficulty, so the Clowers cat walked across the patch and went up to the sit of the cofferdam and started to replace it.

(Testimony of Grant Gordon.)

He did replace the cofferdam and had it in place by some time between nine and nine-thirty in the evening.

Q. All right, how long had water overtopped the bank up to that time that the cofferdam was replaced?

A. Well, it had ceased overtopping the break before the cofferdam was completed.

Q. And in what length of time from the time you started?

A. I estimate it that between thirty and forty minutes it flowed over the patch. [557]

Q. Go ahead, then, and complete what happened.

A. The Terhune cat had started up when I called for him to come up on top of the bank and had mired in the field just downstream—just upstream and a short distance out from the toe of the canal bank. With the help of some of the neighbors we got the cat out, using the Clowers service truck, and with the help of the Clowers cat digging a road down the outside of the bank for the Terhune cat we got both cats up on the bank and started to work raising the elevation of the patch. We worked on that until about eleven-thirty, by which time we had between two and two and a half feet, nearly two and a half feet, on top of the patch. At this time I excused Terhune, told him to go home and get some sleep. The Clowers cat continued to add material to the top of the patch.

About midnight, as we had computed, the cofferdam which we had replaced was completely full and

(Testimony of Grant Gordon.)

we allowed it to overtop, and the water again came past the site of the break. After about a half an hour we noticed that the fill again overtopped, the second overtopping. The Clowers cat continued to add material. The overtopping stopped. We were able to get ahead of it. The water in the canal—The elevation of the water in the canal subsided. Water was passing down the canal without difficulty, until some time——

Q. Well, how long did this second overtopping last? How [558] long did that last?

A. Not over twenty minutes, twenty to thirty minutes.

Q. Did it wash away any of the material on the top of the embankment?

A. Yes, a slight amount, some three or four inches, but no serious amount. No amount of damage was done by the overtopping.

Q. Was that loose material that had been washed away?

A. That is correct.

Q. Just go right ahead.

A. I was standing on the downstream end of the patch watching the action both of the tractor and the water, when I heard the—heard an unusual noise, turned my flashlight into the canal and noticed a vortex some three feet in diameter which had formed directly opposite from where I was standing.

Q. And where directly opposite?

A. I was standing at the extreme lower end, just opposite the patch; I was just downstream

(Testimony of Grant Gordon.)

from the patch, not 10 feet from the end of the patch. The vortex was located at a point, as near as I could tell, about directly over the outside toe—That is not what I want to say—directly over the toe of the inner slope of the canal, where the inner slope intersects the bottom line of the canal. I turned my flashlight outside of the canal to see where the water was going, noticed a heavy discharge of water from a tubular hole, I would call it, which [559] appeared to be about two to two and a half feet diameter, from the toe of the bank just above the elevation of the field. I immediately called the attention of the cat operator——

Q. Which one?

A. That was Mr. Wiley Clowers. First I tried to signal him to back up. It was dark, very dark. I had a flashlight and he couldn't see me very well, so I pointed the flashlight to the vortex to show him what was going on. He got off his cat, came out and looked at the vortex, realized what was happening and got back on his cat and moved it upstream, off the site of the break. The heavy discharge of the water very rapidly eroded the material beneath where I was standing. The top portion of the bank fell in and the water rushed out through the opening. It dug the second break down across the farmer's field and joined with the canyon dug by the first break, and the water continued on down the hill in about the same area that it did on the first break.

(Testimony of Grant Gordon.)

Q. Did any part of that water flow over the top of the bank?

A. No portion of the water which was involved in the flow came over the top of the bank. There was no overtopping of the bank.

Q. How far below the top of the bank was it,—That is, the water level—at the time that that vortex appeared?

A. The water level was below the normal high-water surface of the canal. [560]

Q. Now, describe what that vortex is, in order that we will get that clear. What do you mean by that?

A. It is a morning glory-shaped phenomenon. It looks in the large scale just like the vortex that forms when you pull out the plug in the bathtub.

Q. And the effect of that, as you have described as to whether or not the under portion of the bank of the canal below where you had put in the new patch had washed out, letting the bank drop in? Is that what had happened, as you have described it here?

A. Well, the material through which the blowup occurred was completely downstream and completely separate from any material that we had placed, the original patch. It was through the original structure, the original stratum. It was some 25 to 30 feet downstream from the material through which we had dug our cutoff trench in the first patch.

Q. And then what did you do, Mr. Gordon?

A. There was nothing that I could think of to

(Testimony of Grant Gordon.)

do then except to make sure that the cats and the equipment were safe. All the water which was scheduled to come past the site of the break had already been ordered turned off by Mr. Spofford at the time of the first overtopping. There was nothing further I could do then.

Q. Do you know how long it takes water to come down from the dam to this point of the break? How long the water—— [561]

A. I think it takes approximately twenty-four hours to deliver water from the dam—from the reservoir to the site of the break.

Q. All right, just go ahead, then, and describe your operations generally for the second break.

A. The first thing that was necessary was to drain the area. There wasn't anything that we could do about stopping of flow immediately. The water continued to drain out through that break most of that day, and we started early the next morning on the repair of the second break.

We had nearly exhausted the gravel supply from which we got materials for the first break and we had used up easily accessible materials in the bottom of the canal, so it was necessary to get some additional equipment to bring materials in from a greater distance. Some additional muck trucks and some additional draglines and a sprinkler wagon were engaged, and the gravel delivery end of the organization began to stockpile additional material in preparation for the repair of the break.

As soon as we could get into the canal we again

(Testimony of Grant Gordon.)

started repair in the bottom. At this time we set the dragline on the downstream side of the break and started to investigate the soundness of the bank downstream from the site of the break. The erosion from the break had cleaned out any evidence of that material, but after we started digging with the dragline [562] within 10 or 15 feet downstream we immediately ran into a very unstable type of material which lay in a very definite stratum, the top of which was about 4 feet below the bottom grade of the canal. The stratum itself was about 3 feet thick. With the dragline we dug completely through this stratum for a distance something over 300 feet downstream from the break, until we reached a point where the stratum dipped down and where it became—gave a tight, a watertight, solid, competent appearance. The cut which we made with the dragline was then backfilled with a mixture of the selected material and gravel. The first patch, which had stood firm, was broken down and the material used in the bottom of the second patch, additional materials imported by carryall from the adjacent canal bank mixed with the pit-run gravel, sprinkled and mixed, blended, and worked into place with the 'dozers, and the entire patch brought up to the designed height of the canal bank. In addition, we backfilled with selected materials mixed with gravel in the bottom of the canal to bring it up to designed canal grade. Then we placed a layer of pit-run gravel on the inside of the outer canal bank, thicknesses varying from six

(Testimony of Grant Gordon.)

inches at the top of the bank to, in some places, as much as six feet at the grade of the canal, to protect against leakage and to strengthen the bank. When that was done we admitted a small flow of water past the break and gradually, over a period of several days, [563] brought the canal back up to full operating capacity.

Q. And what did you do relative to material for the bottom of the canal that you had scraped down to solid formation of which you speak and cleared out? What did you do to bring that level up to the level of the floor of the canal?

A. When we repaired the first break we placed material, 'dozed material from the top of the bank above the canal into the bottom of the canal and spread it out for a partial backfill of the canal to canal grade. The material was a very light silt. It was not sufficiently stable in itself to make a complete repair. Our plan was to continue the gravel operation, to mix gravel with that silt, while the canal was in operation.

Q. Was it planned to line the——

A. A better way would be to say that we would blanket that silt with gravel.

Q. Was it the purpose to blanket the side wall as you built up that wall?

A. Blanket the side wall as well as the bottom of the canal.

Q. And you were not through and had not completed, as we understand your testimony, your first repair when this blowout happened below that

(Testimony of Grant Gordon.)

where you were repairing and doing that work?

A. That is correct. The operation was still going along as fast as we could prosecute it. [564]

Q. All right, then what did you do after that went out to fill up the floor of the canal to the floor level up from below, where you had removed the soft material, the soft earth?

A. When we had repaired the second break we put the canal back to the usual grade, using a mixture of selected fine materials and pit-run gravel, which was compacted in place.

Q. And did you place silt from the top of the bank into the canal and, if so, how far upstream was it put into the canal from the upper bank?

A. We put into the bottom of the canal as far as the cofferdam—that was the upstream limit of the erosion in the bottom of the canal—and we repaired it downstream as far as there was any erosion, which was about a hundred to a hundred and fifty feet.

Q. Was there any silting placed over the top of the upper bank on up higher upstream?

A. No, we put no blanket on the upstream slope of the canal. We did straighten that out by hand, using picks and shovels to smooth the section, to improve its hydraulic characteristics and to get a small amount of additional width to make up for fill which we planned to put in, so that we could not encroach on the water section.

Q. And that was all done while you were there working on the canal? [565]

(Testimony of Grant Gordon.)

A. That is correct. That was during the entire operation.

Q. I will ask you this question: What, in your opinion, from your experience as an engineer and your observations here and your own work in the bottom of that canal, was the cause of the first break?

A. I think the cause of the first break was very similar to the cause of the second break, which I observed, in that a stratum located at some depth below the bottom grade of the canal actually failed structurally. By that I mean it collapsed, it lost its homogeneity, it broke down structurally.

Q. And what was the cause of it breaking down, in your opinion?

A. I believe the introduction of seepage through the bottom of the canal and through broken joints had allowed the stratum to saturate, and it was in places, the points of the breaks, under full flotation, completely lubricated, and without sufficient internal structure to resist the load that was placed on it.

Q. And what was, in your opinion, the cause of the second break?

A. I think it failed in the manner I have described, similar to the one I have described, by the failure of the stratum below the bottom grade of the canal, which collapsed, allowed the bank to move out and down.

Q. In your opinion, was the overtopping or turning of water [566] in, the overtopping, any part of

(Testimony of Grant Gordon.)

the break—that is, the cause of the second break?

A. In my opinion, the overtopping had nothing to do with the first or the second break.

Q. Did those overtoppings make any wash or prolongations of the wash as shown in Plaintiffs' Exhibit No. 82?

A. The water which topped, which got over the top of the bank, flowed down the same wash which was produced by the first break.

Q. How far downstream, that is, below the toe of the bank, did it join with the other flow?

A. You are speaking now of the overtopping?

Q. No, no, I am talking about the second break.

A. The second break joined the first break at a point some hundred and fifty feet out from the toe of the canal bank.

Q. And that accounts for those excavations that are shown in 82—or in—yes, in 82—that is, the fingers that point up there?

A. That accounted for the two forks of the wash.

Q. Yes, that is what I say, the two forks of the wash. Will you step down to the model here and demonstrate, now, by the handling of the lower portion, that second break?

A. (Witness demonstrating with Defendant's Exhibit 53.) Removing this portion of the remaining loose pieces, this illustrates the relation of the two forks to the two breaks. [567]

Q. Could you point out the strata up and down

(Testimony of Grant Gordon.)

the canal, along the bed of the canal, of which you speak, the top strata.

A. The one which I observed lies at about the relative elevation shown in brown.

Q. That is, you are pointing to the second break?

A. That is right. We found it by excavation through the bank of the canal and into the original structure to a depth some 8 feet below the bottom grade of the canal for a distance of some 300 feet downstream from the second break.

Q. You may be seated. Now, state whether or not there was anything that indicated a necessity for sealing the upper bank of the canal at or near the points of the break and where you had made this repair using the hand labor crew.

A. We straightened up the inner bank for a distance of some 300 or 400 feet past the site of the breaks. We did that by smoothing the rough surface which then existed and left a smooth slope. In so doing we exposed the stratum which existed in the upper bank for a distance, as I have said, of some 400 feet. That was from about 250 feet above the break to some 150 feet below the break. The stratum as was exposed appeared to be perfectly competent, tight and sound. We have some photographs that indicate that.

Q. Was there any material then placed over the bank along that while you were there?

A. Not while I was there. [568]

Q. Would you hand the Exhibits 42 and 46 to the witness. Would you turn to Exhibit 45—I want

(Testimony of Grant Gordon.)

to see if I have got the right number here—and show the Court what that represents and from where the picture was taken during the course of your construction of this repair?

A. This is Exhibit 45. The picture was taken from the top of the crest of the canal, looking almost due north over the site of the first break. It shows the tapering in horizontal plane of the fill, the two Caterpillars, tractors, stock-piling the material which had been taken from the bottom of the canal, and shows the hand crew working at the top and squaring up the inner slope of the canal.

Q. Then the pile of materials to the right, where the Caterpillars are, are the loose materials that were taken out from the bottom of the canal that were later blended with your gravel in repairing the bank, is that correct?

A. That is correct. I also notice some equipment parked out there, cars and service equipment.

Q. Now, if you will take Exhibit No. 44 and describe from where and whence that was taken and what it shows.

A. That is taken from a point on the outside canal bank downstream of the first break. It shows the Terhune cat stock-piling material from the bottom of the canal; it shows the Clowers cat starting to cut into the upper bank to reach sound material for a key; and at the bottom of the photograph [569] shows a small portion of the gravel which had been stockpiled. On the background, right background, it shows the hand crew working on the upper end of

(Testimony of Grant Gordon.)

the portion of the inner bank which we straightened up and squared up.

Q. Will you refer to Exhibit No. 42, please, and explain from which direction that picture was taken and what that shows?

A. That is similar to the first picture I described, in that it was taken from the crest of the hill above the canal, from a point upstream almost to the site of the cofferdam, and it is pointing almost north, looks out across the site. It shows the hand crew working on that upper slope and shows a view of the completed slope on the portion immediately upstream from the first break. That portion of the bank is ready to receive the gravel blanket which we put on it.

Q.' And will you refer to Exhibit No. 43, please, and describe that to the Court, from where it was taken and what it shows?

A. This is a view taken from the crest of the hill, just at the top of the canal slope, looking a little bit west of north, almost down the center line of the outer canal bank, at the site of the break. It shows the first cofferdam, the stock pile of materials which had been removed from the bottom of the canal, it shows the shape of the bottom of the canal after we had squared it up. It looks on down the canal to show the condition of the canal down to and past the site [570] of the break.

Q. Now, what you call the stock pile, that is indicated by the pile of material down—out in the field

(Testimony of Grant Gordon.)

upstream from the automobiles which you have talked about? A. That is correct.

Q. The cutting of the bank that you notice from the cofferdam, what is that?

A. That is opposite the cofferdam?

Q. Yes, opposite the cofferdam?

A. That is the cut where the materials for the cofferdam were secured. Further downstream, on the back side of the picture, is the site of the break.

Q. Which break?

A. The first break.

Q. Now, will you please refer to Exhibit No. 46 and describe that to the Court, please?

A. This is a view taken from the center of the canal, looking a little north and east, through the first break, and it shows the character of the materials which were left by the scouring water. The material on the left-hand side of the picture is the material through which we dug the cutoff trench underneath the first patch.

Q. And when was that picture taken?

A. This picture was taken either Tuesday or Wednesday. I think it was Tuesday. To the best of my recollection, it was [571] Tuesday.

Q. And the break was Sunday, as I understand?

A. That is correct.

Mr. Hess: If your Honor please, should we proceed further with this witness now? If we could review his testimony I think perhaps we could save time and cut this shorter, if we could have a recess until morning, sum up with this witness.

(Testimony of Grant Gordon.)

The Court: How many more witnesses have you?

Mr. Hess: If your Honor please, we would have, taking the lay witnesses, some nine witnesses, but many of these will be very, very short witnesses, or some of them will be.

The Court: Let's see, how many have you had today? Four?

Mr. Hess: What is that?

The Court: How many witnesses have you had today?

Mr. Hess: Well, if your Honor please, we have had today on the stand three, three separate witnesses, with this one, three very principal witnesses. This man made the actual repair, of course.

The Court: Well, are all the witnesses lay witnesses from now on?

Mr. Hess: No, your Honor, we have a disinterested engineer, that is, not with the Department of Reclamation, and more for hypothetical questions concerning this matter. Then we have one engineer, the irrigation engineer, Mr. Spofford, [572] who was on this bank of the canal first when the situation happened. Then we have the ditch rider.

The Court: Well, it will take all day tomorrow for those two, won't it?

Mr. Hess: Well, I don't think it will, your Honor. I don't think it will.

The Court: It will unless you make faster progress than you have made today.

Mr. Hess: Well, we are putting on our principal

(Testimony of Grant Gordon.)

witnesses that we have today. We have been putting on our principal witnesses, we feel, in the order of their importance.

The Court: All right, I will adjourn tonight, and tomorrow I will go right straight through. If I let you go now I expect you to finish your case tomorrow. If you finish it by five o'clock, all right; if not, we will hold until you do.

Mr. Hess: Well, if your Honor please, I would just as lief go all night, if you want to go all night long. I am not saying that, your Honor. But we think this is an important case and we must present it. I am telling you that I feel we can save time by stopping now with this witness and then proceed, and if you wish to proceed, all right.

The Court: I haven't any feeling that you ought to go on now, but if you can organize your case tonight so that you won't have to run your case tomorrow night it is all right with me. [573]

Mr. Hess: I thought that we would be able to get through our testimony, when we started our testimony, in two and a half days, but I am revising my estimate now. I don't think it can be done, and I don't think it can be done tomorrow. Frankly, I don't think it can be done.

The Court: Well, I will hold tomorrow night. I will adjourn tonight and let you organize your case, in the hope that you can get through so we won't have to hold too long tomorrow night.

Mr. Hess: Well, we will try that, your Honor. We will work very fast with that object in mind.

(Testimony of Grant Gordon.)

The Court: All right, court is in adjournment until tomorrow morning—would you like to start at nine in the morning?

Mr. Hess: I think that would be better.

The Court: Adjourn until tomorrow morning at nine o'clock.

(Whereupon, at 5:10 o'clock p.m., Tuesday, June 15, 1948, the trial of the above-entitled cause was suspended, the Court taking an adjournment to 9:00 o'clock a.m., Wednesday, June 16, 1948.) [574]

Wednesday, June 16, 1948, 9:00 A.M.

GRANT GORDON

thereupon resumed the stand as a witness in behalf of the defendant herein and was examined and testified further as follows:

Direct Examination (Resumed)

By Mr. Hess:

Q. We were discussing the photographic exhibits, I believe, when we closed yesterday evening. I wonder if the witness could be handed Plaintiffs' Exhibits, photographic exhibits 18, 19 and 20. Referring to photographic Exhibit No. 18 of the plaintiffs, showing the caterpillar in the bottom of the canal, will you explain that to the Court and what the black bank and the light material, all of that to the left of the caterpillar, represents?

(Testimony of Grant Gordon.)

A. The caterpillar is starting to work to clean out the bottom of the second break and square it up with the patch, and the material to the left of the caterpillar on the lower bank there is all material which was placed in the first patch and it is still standing intact.

Q. And does that show clear through across as the second line the heavy material below the skyline showing the upper bank?

A. That is correct. [575]

Q. And it includes clear to the left side of the picture? That is all a part of that lower bank, is it, that you put in?

A. It is all part of the patch, yes, sir.

Q. Part of the patch. And the caterpillar that is in there, what is it doing?

A. It is squaring up the bottom of the break to get down to sound material to begin the second patch.

Q. Referring to Plaintiffs' photographic Exhibit No. 19, showing the caterpillar and material to the left and to the right and a dark object up in the right-hand side of the picture, will you explain that all to the Court?

A. This picture is taken from a slightly different angle than the previous picture, just a few feet upstream from the previous picture. It shows the material placed in the first patch to the left of the picture, it shows the tractor cleaning out loose material in the bottom of the break, and it shows the

(Testimony of Grant Gordon.)

bucket of the dragline in the upper right-hand corner starting the excavation of the trench. The bucket is dumping at the moment the picture is taken.

Q. Does that show any part of the patch of the first break?

A. The material to the left of the caterpillar, to the left of the picture, is all patch.

Q. Of the first break?

A. Of the first break, the first patch.

Q. Then that dark object at the right there that is up on top and shows——

A. That is the dragline bucket swinging out to dump.

Q. Now, referring to Plaintiffs' photographic Exhibit No. 20, Mr. Gordon, showing the caterpillar tilted to its right, will you explain that and that operation, what is going on there, as shown by that picture?

A. That is the caterpillar in the second break, a detail view showing it cleaning out at the base of the first patch. The water that you see there is from the second break. He is digging down to get the firm material at the base of the first patch to start the keyways for the second patch.

Q. And this material, then, to the left of the caterpillar, or on the tilted side of the caterpillar, that material is all a part of the first patch, is that correct?

A. That is correct, all the material that you see to the left of the dozer is material from the first patch, the first break.

(Testimony of Grant Gordon.)

Q. If you will hand that to the Court, please. Now, Mr. Gordon, I believe you stated that at the low end of the bottom of the canal at the point of the water in the canal—that would be the upper portion of the bank, the lower bank, the upper portion of the lower bank—how deep was it that you said that you had to excavate there, that had been washed? That is, that you——

A. The first break, the scour in the bottom of the canal at the inner toe of the outer bank was approximately seven feet.

Q. Now, in preparing your base, your solid base, and for the first patch, how deep did you go in clearing that same stratum out to the toe of the bank? How deep were you?

A. The erosion had stepped down. The hole, the break, was deeper on the outside of the bank. The foundation had to be squared out, be excavated to an additional depth of some ten feet below the erosion in the bottom grade of the canal. That made a total depth out at the toe of the bank of some seventeen feet below the bottom grade of the canal. That was at the outer toe of the canal bank.

Q. In your qualifications, Mr. Gordon, as you gave yesterday, you testified to the effect that you were in charge of all geological investigations on the Columbia Basin Project for seven years and had charge of the analysis and investigation of earth fill materials for the South Coulee Dam and the North Coulee Dam, about two hundred miles of highway and of railroad grade; is that correct?

(Testimony of Grant Gordon.)

A. That is correct, yes.

Q. And that you made the investigation on causes and treatment of major earth slides at the Coulee Dam and made percolation and stability tests on earth foundation and earth fill materials for that project.

A. That is correct.

The Court: That is all in the record now. No use to repeat it.

Mr. Hess: I was just asking it to lay the foundation for [578] this question.

The Court: I am sufficiently impressed without repeating it.

Q. (By Mr. Hess): I will just ask this question, then: You testified yesterday concerning the manner of the first patch. What did you do to determine where the first patch should end? What did you do to make that determination?

A. Well, first I examined the bottom of the canal, the entire eroded area, from several hundred feet above the break to several hundred feet below the break, the wash and field below it, to determine the break; I carefully examined both sides of the break, the floor of the break, the wash and field below it, to determine the nature and habit, characteristics of the formations, to determine what might be the proper method of procedure. It was a difficult patch to place. It consisted essentially in building an earth dam on a foundation which was sloping the wrong way and which had to be keyed in just like a dam into the existing canal banks. The investigation

(Testimony of Grant Gordon.)

which I did make consisted of careful examination and digging with a pick and digging with a shovel and observing the operation of the D-8 caterpillars, which were the biggest cats we had available, the operation of the dragline bucket as we dug the trench across the bottom of the break and up the side of the break on the downstream side.

Q. What did you observe as to the condition of the exposed strata of the downstream canal bank during the placing of that [579] first patch?

A. Well, they appeared to me to be entirely competent, they appeared to be water-tight and they appeared to be sound and they appeared to be as good as any of the other strata visible in the entire vicinity. I saw no reason to experience any difficulty with that above.

Q. Tell the Court concerning the characteristics of the exposed strata that you observed in the downstream abutment and the bank adjacent to the first break.

A. Well, the strata consisted of what I called a sandstone, typical of what we call the Payette formation, which the geologists now call the Idaho formation. They are beds of sandy lakebed formation. They dip and strike very considerably over very short distances. The strata are difficult to distinguish one from the other, because their characteristics change rapidly. While a bed may be tight and hard in one locality, ten feet away it may be considerably softer or harder. It was a difficult thing to patch.

(Testimony of Grant Gordon.)

Q. Did you observe the strata in the uphill side bank of the canal in the vicinity of the break?

A. Yes. We stripped off the loose material on the upper slope and squared that slope to a smooth surface, as indicated on some of your photographs. We did that by hand. I went over that slope many times. We had to take that material off with picks and bars. It was hard and firm and dense and it was not [580] an easy matter to move. It was sound and I regarded it as competent material for a canal.

Q. What do you say as to the porosity and permeability of the strata that you observed in the upper bank, that are shown in Plaintiffs' Exhibits Nos. 73, 76 and 77, if you will point that out and explain? A. At the time of the——

Q. If you will step back, so the Court can see it, Mr. Gordon.

A. At the time of the repair—I am pointing to Exhibit 76 now—we cleaned off this stratum for the full distance of about two hundred fifty feet upstream of the first break and some one hundred fifty feet downstream of the first break to a smooth surface. The stratum exposed then was hard, dense, and appeared to be tight, an entirely competent formation for operation of a canal.

Q. And what about 73?

A. This, as I understand it, is a closeup of that same stratum. It gives a very loose appearance now. The materials which you see in there have been loosened by weather and by some dropping out of place. The materials as shown on the left side of

(Testimony of Grant Gordon.)

the picture indicate its stratified nature. If you strip off this loosened outer portion you will find a dense, hard, compact structure there which is essentially tight. It has some gravel shown in the stratum when you view it in its natural state. The gravel is bedded firmly and tightly in fine material. It [581] is only when the weather loosens it up that it gives it this appearance.

Q. And what do you say as to the material shown and where it came from in those pictures 73, 76 and 77? That is on the upper——

A. I believe this material which is shown loose here at the bottom is material which has been dozed off the top of the bank and is lying—this is two years, as I take it, since the break.

Q. I think you may be seated now. You have examined Plaintiffs' Exhibit No. 80 here, the map, or the drawing, rather, that is shown on the board. You heard the testimony of Mr. Merritt, and you have examined that exhibit, have you?

A. That is correct, I have.

Q. From your examination of the exposed strata in the canal about which you have just testified, what is your opinion, with reasons, as to whether there is a porous stratum in the upper and lower banks of the canal, as illustrated on that exhibit?

A. Well, in the region of the break, as I have testified, upstream and downstream from the break, in the bottom of the canal and in the exposed portion of the outer canal bank as we dug it in both the first and second breaks, this stratum——

(Testimony of Grant Gordon.)

Q. That is, you are referring to the uphill bank?

A. On the uphill side—no pervious stratum appears on the [582] upper side of the bank within the wetted perimeter, no porous stratum appears above the bottom grade of the canal on the downstream side, or in the outer bank. The slopes of the strata across the break are not uniform. This stratum does not dip down to the bottom of the canal (indicating).

Q. That is the upper stratum shown?

A. The stratum indicated at the water line on the uphill side of the canal does not dip down through. I could not follow that stratum across. There was a porous stratum uncovered after the second break. When we dug the trench downstream from the break we found a porous stratum lying in a position below the one shown here.

Q. And how far below the bottom level of the canal?

A. Some four feet below the bottom grade of the canal to the top of the stratum. The stratum itself was about three feet thick. It was lying at a flatter angle than that shown on this drawing.

Q. And was that the first stratum of porous material that you found underneath the lower bank?

A. That is correct.

Q. And does that apply to the lower or second break as well as the first break?

A. It applies particularly to the second break, because that is the best opportunity we had to get

(Testimony of Grant Gordon.)

into the stratum at the lower bottom grade of the canal. [583]

Q. I think you may be seated now, Mr. Gordon. On your model here that is Defendants' Exhibit 53, in drawing the second break there I see there are no what are called trenches made for a core. Were there trenches made for core in the second fill that you made?

A. Yes, sir. We broke down the remaining existing floor which was the first patch and dug into the toe of it until we could connect with the cutoff trench which we had dug across the first patch. We dug that trench some three feet into the native materials, and continued it on downstream completely across the patch and for some three hundred feet downstream from the break, the second break.

Q. Now, the materials at either end of the break—and that would apply to the first break and the lower end of the later break—after you removed the soft materials how did that appear as to being hard or otherwise, or soft, or what was the condition of it?

A. I don't know that I know just the point you are referring to.

Q. Well, I am trying to get at——

A. The materials on the first break exposed in the abutments of the break were sound. When we looked at the materials in the second break the upstream abutment was originally patched, the downstream abutment still appeared to be sound, but as we dug into the thing with our dragline to

(Testimony of Grant Gordon.)

make positive assurance we [584] hadn't dug more than ten feet before we ran into this weak stratum which I have described some four feet below the bottom grade of the canal, and we followed that one north, downstream, until it had again become firm and tight.

Q. Now, then, Mr. Gordon, I will ask you if since you made that repair you have observed the condition of the bank, the lower bank, and down to and including the toe of the bank, on various occasions since the commencement of this trial?

A. Yes, I have.

Q. And state to the Court what is the condition of that, if there is any seepage there whatsoever, or just describe the condition.

A. The outer bank appears to be dry and tight, no evidence of seepage whatever.

Q. Now, does that apply all the way across the Shaw property? A. That is correct.

Q. What is known as the Shaw property? Have you examined the bank up through to and including the Hust property? A. Yes, I have.

Q. Upstream? A. Yes, I have.

Q. What is the condition of that bank?

A. The bank is dry, no evidence of seepage for a mile upstream of the break.

Q. Now, where do the vegetation and trees—from what point [585] do vegetation and a row of trees that exist on the Shaw place and as shown in that picture No. 79—where does that commence with reference to the toe of the bank?

(Testimony of Grant Gordon.)

A. This is 69.

Q. Sixty-nine, yes, 69.

A. The trees shown in Exhibit 69 are all growing within two feet of the original service ditch, the farm ditch, along the toe of the bank.

Q. That is the farm ditch, is it?

A. The farmer's ditch, that is correct.

Q. And what does the vegetation show generally, as to whether it shows above that bank or below toward the farmer's field from that ditch?

A. The only vegetation now appearing in that area, such as sweet clover or willows or alfalfa, is all growing within reach of capillary water of the farmer's ditch, a distance of two feet.

Q. And how far would you say that that capillary water reaches up on the upper side, or below the bank of the ditch, how far from the farmer's ditch?

A. Oh, roughly, a foot in elevation.

Q. Now, then, referring to Exhibit No. 82 and the four and some tenths acres that are shown there on both sides of this wash, state whether or not you have examined the condition of that ground and in particular two or three hundred feet of that [586] ground since the commencement of this trial?

A. Yes, I have.

Q. And what is the condition of it?

A. Very dry.

Q. Is there any evidence of any seep whatsoever from the canal in any respect there?

A. I could see none whatever.

(Testimony of Grant Gordon.)

Q. And does that cover and include across, clear across, the Shaw properties?

A. Well, there is seepage observable on the Shaw properties in the gulch to the north of the area shown on Exhibit No. 82.

Q. And how far is that downstream from this property and the point of the break?

A. Well, it is somewhat in excess of three hundred feet from the break.

Q. And what, if anything, has been done there to take care of that seepage? Any tiling or anything—

A. Shortly after the completion of the repair on the second break we installed something over two hundred feet of drain tile parallel to the farmer's ditch and almost on its alignment, immediately north of the gulch that we are speaking of, to pick up seepage and to stabilize the surface, the support, at the toe of the canal.

Q. Now, then, in your opinion, where that water was and where you filled in, does that have anything to do with the bank, with [587] either the upper or lower bank, near and in the vicinity of this break?

A. I think not.

Q. Now, on the Hust land, where do the vegetation and the trees, the first trees, line of trees, show with reference to the farmer's ditch on the Hust property?

A. The Hust property is immediately upstream of the Shaw property. The trees growing at the

(Testimony of Grant Gordon.)

outer bank of the canal are all within two feet of the farmer's ditch.

Q. Is there any vegetation whatsoever at any place through that Hust property along the line of the ditch, any green vegetation along the——

A. I could find none.

Q. Clear from the bank to the toe?

A. That is correct.

Q. Now, then, when you had constructed your repair did you place any piping or tiling, or anything of that nature, down in below where you made the repair and toward or near where this wash is shown on Exhibit 82, to take care of any seepage if it should happen?

A. Yes, we did.

Q. Describe that to the Court, will you, please?

A. The fact that the canal bank blew downstream from the first break raised a little question of the stability that might be in the area just above the first break, upstream of the first [588] break, so we constructed a string of tile, some two hundred fifty feet as I recollect, in the field just about fifteen feet outside the lower toe of the canal bank, parallel to the canal bank and the farmer's ditch, to pick up seepage if there were any, and stabilize the foundation of the toe of the canal bank. We did that while the repair of the second break was being made.

Q. State whether or not there is any seepage there now, if you know, in that tile?

A. No, it is perfectly dry.

Q. In other words, the bank does not seep, is that right?

(Testimony of Grant Gordon.)

A. It dried up in about a week after we had dug it.

Q. Would you describe where this cat was stuck and the condition of the situation down there and what you think was the cause of it?

A. The cat was stuck at a point about where we dug the—where we installed the tile. Three days previous to the first overtopping one of the cats had been using that particular area to service. They parked the cat there several times. They had operated service trucks across that area quite freely.

Q. And, of course, the water had flowed out through the first break prior to that time, had it not?

A. That is correct.

Mr. Hess: That is all. [589]

Cross-Examination

By Mr. P. J. Gallagher:

Q. Mr. Gordon, just answering further on that question right there, the water flowing out of the first break did not flow over the place where the cat stuck? A. I would not know, sir.

Q. The cat was stuck further south from where the flow took place, wasn't it?

A. I was not present at the first break, and I suspect that the water would spread out over that area before it cut the gulch.

Q. Well, the cats weren't there after the water was in there at all, were they?

A. That is right.

Q. The cats were not there after the first flow?

A. That is right.

(Testimony of Grant Gordon.)

Q. Did you understand that counsel asked you whether the water flowed over from the first break after the cat had been stuck?

A. That is right, I didn't understand it that way.

Q. Will you tell us now, as near as you can, how high the new fill was built up above the normal water flow line in the first break when you turned your head of water in?

A. It was right at the normal water surface, within a very few inches.

Q. And that would be how high in feet? [590]

A. Well, it would be over six feet above the normal bottom grade of the canal.

Q. Six feet above the normal bottom grade of the canal?

A. That is correct.

Q. And how high was it when the water started to run over it?

A. That is substantially the same elevation. That is what I intended to convey.

Q. And what was the rate of flow down the canal at that time when she was running over?

A. That I can't say exactly.

Q. What is your judgment as to the amount of water going down and the rate of flow?

A. Well, that is a matter of very difficult hydraulics. It is the summation of the water which came out of the stored water behind the cofferdam plus whatever active flow was in the canal. It could only be estimated accurately if you know the velocity. I don't know what the velocity was.

(Testimony of Grant Gordon.)

Q. Do you know what the normal rate of flow down that canal is?

A. At full capacity, with the canal operating freely, it is approximately 450 second-feet.

Q. Do you know what the normal velocity is down through there?

A. About two and a half—approximately two and a half feet per second.

Q. Now, as I understand it, the cofferdam was regulated and [591] then there was some intervention and then there was a second overflow of the water. How high had you got the canal bank up by that time?

A. To my best estimate, it was something over two feet above the water line.

Q. And what was the width of the water surface at that level?

A. The width of the water surface?

Q. Yes.

A. Oh, it must be about thirty feet. The canal is over-wide there, wider than the design section.

Q. Now, you came out there on Monday morning, July 15th, when you first saw the vicinity of the break?

A. That is right.

Q. As I understand it, this break occurred Sunday, sometime in the middle of the day. Have you got the exact hour, or nearly the exact hour, from your records?

A. No, I can't tell you. I understand it came sometime around noon.

Q. Sometime around noon on Sunday?

(Testimony of Grant Gordon.)

A. Yes.

Q. When you got there on Monday morning what amount of water was escaping through the canal break?

A. Oh, I didn't note very closely, but it was, oh, fifty or sixty second-feet, as a rough guess.

Q. That was some eighteen to twenty hours after the approximate [592] time of the break in the canal?

A. That is correct.

Q. How long did that continue to flow at that rate or a diminishing rate before you could get in and make any observations for doing work?

A. Well, we could make observations at that time. We couldn't do any effective work in the bottom of the canal until the next morning.

Q. That would be Tuesday morning?

A. Tuesday morning.

Q. Had the water ceased running Tuesday morning?

A. There was a small trickle still running in, which we closed off with the cofferdam.

Q. And when did you put the cofferdam in to close off any flow down there?

A. That was Tuesday.

Q. During the early part of Tuesday?

A. Well, it would be completed along Tuesday afternoon.

Q. Did that effectively shut off the flow so you could go to work then?

A. That is correct.

Q. Now, as I understand your testimony, the entire bed of this canal was either washed away or

(Testimony of Grant Gordon.)

washed down very low, both sides of the first break?

A. There was considerable erosion, yes, sir. [593]

Q. How far upstream did the eroded surface end?

A. Approximately three hundred fifty feet.

Q. Would that be about where the cofferdam was?

A. That is correct.

Q. Then from the cofferdam on down to the break it had eroded down to where it had reached a depth of some seven feet below the normal bottom of the bank?

A. That is right, about the line of the inner toe of the bank.

Q. And it had eroded also on the downstream side?

A. That is correct, but to a lesser extent.

Q. That was because of the water running back?

A. That is correct.

Q. And what area of the bottom of the canal showed that erosion, for what distance up and down the canal?

A. Well, it wasn't uniform completely across the width of the canal.

Q. I appreciate that, but for what distance up and down the canal? Three hundred and fifty feet from the upper end, and how far down below?

A. Oh, I would think about one hundred fifty feet—about one hundred feet, I would say.

Q. That would be approximately four hundred fifty feet?

A. That is correct.

Q. Now, in making your repair, and after you

(Testimony of Grant Gordon.)

got your key wall in, had you finished that work before the water was turned [594] in?

A. I don't understand you. Finished what work?

Q. The raising of the bottom of the canal up to grade?

A. No, sir, we hadn't intended to finish it. We had——

Q. The bottom of the canal hadn't been raised up to grade before you turned the water in?

A. That is correct.

Q. How far below the bottom of the grade do you think it was, Mr. Gordon?

A. Well, that was a varying proposition. I think the maximum was about between three and four feet.

Q. And then it would feather out toward either end?

A. That is right.

Q. You aimed to turn in, as I got your testimony, about twenty second-feet?

A. That is what I requested, yes, sir.

Q. And how was that run through the cofferdam? How did you get the water through the cofferdam?

A. I cut the cofferdam with a shovel.

Q. I see. What time of day, and on what day, did you start the water through the canal, the twenty second-feet?

A. Well, I didn't handle the water. I requested it Wednesday morning for Wednesday night.

Q. For Wednesday night?

A. That is right. [595]

(Testimony of Grant Gordon.)

Q. And when was the cofferdam taken out so water could pass the cofferdam?

A. I cut the cofferdam about 8:00 o'clock Wednesday evening.

Q. And that was when the flow of water passed through there? A. Yes, sir.

Q. And you aimed to get about twenty second-feet? A. Yes, sir.

Q. And was that for the purpose of puddling the bottom of the canal?

A. No, that was to get water through the canal and begin delivery, and we would continue our repairs during delivery.

Q. And at that time the bottom of the canal at its deepest place was three feet below the normal surface? A. Approximately.

Q. And a more or less distance below for the entire length of the break?

A. That is right. The silt was not in itself sufficient material to complete the repair in the bottom of the canal.

Q. What were you going to do then?

A. We were going to blanket that with pit-run gravel.

Q. But you hadn't got around to working at that yet?

A. Well, that was a question of getting delivery fast enough at that point, and we planned to put the gravel on during operation.

Q. But no gravel had been put into the bed of the canal before [596] the water was turned in?

(Testimony of Grant Gordon.)

A. No, sir.

Q. And that, you say, was about 8:00 o'clock Wednesday evening? A. That is correct.

Q. Now, that area where the ditch bed was still below surface, would that extend far enough north to be opposite where the second break took place?

A. Yes. Not at the full three-foot depth, though.

Q. No, no, I appreciate that. Then for an area three hundred fifty feet above the break and a hundred to a hundred and fifty feet below the break the ditch bed was exposed and not brought back to level at the time you turned the water in Wednesday evening?

A. I will agree it was not back to level. I don't quite understand what you mean by exposed.

Q. Well, I mean to say——

A. It was covered. It was all covered.

Q. With what type of material?

A. With silt from above the canal.

Q. That is the silt that was pushed in from the upstream side? A. That is right.

Q. Well, while we are on this water question, let's go a little further on that. About 8:00 p.m. the cofferdam was cut and water started past. At what time, then, did it begin to run [597] over the bank of the canal?

A. Oh, I would estimate within thirty or forty minutes.

Q. Thirty or forty minutes? A. Uh huh.

Q. So you must have been getting a bigger head than twenty second-feet?

(Testimony of Grant Gordon.)

A. It could very easily have been.

Q. Well, as a matter of fact, twenty second-feet wouldn't have run over the bank of the canal?

A. Well, you must remember that when I cut the cofferdam I had to release the water that was stored behind the cofferdam also.

Q. I understand; and that would have caused a flow of more than twenty second-feet?

A. That is correct.

Q. And, as a matter of fact, it would have caused a flow big enough to run over the embankment?

A. That is correct.

Q. And then did that alarm you when it started to go over the bank?

A. I wasn't particularly happy about it.

Q. I understand.

A. But from the standpoint of stability I wasn't concerned about the patch.

Q. Well, you did, then, attempt to cut the flow down? [598]

A. Oh, yes; we put the cofferdam back in.

Q. All right; then how long was that cofferdam effective in shutting off the flow before you had your second run over the top?

A. Until after midnight.

Q. Until after midnight.

A. Shortly after midnight.

Q. Then it started to run over the top again?

A. We filled the cofferdam, as we had anticipated. At this time we allowed it to run over the top. We then considered we were ready for it.

(Testimony of Grant Gordon.)

Q. And you made no attempt to stop the flow upstream and it came on over the cofferdam and into your new work?

A. No, that is not correct. The water had been ordered shut off by Mr. Spofford when we overtopped the first time.

Q. Oh. Now we are talking about the second break?

A. That is right.

Q. Now, when in the operation, do you know, did Mr. Spofford order it shut off?

A. As soon as he saw it overtop.

Q. And where did that shutoff take place?

A. I am not very good at telling that.

Mr. P. J. Gallagher: Mr. Spofford will be on the stand, will he?

Mr. Hess: Yes, he will be on the stand. [599]

Mr. P. J. Gallagher: Very well.

Q. Then during that operation you called Mr. Terhune back to assist in raising the canal bank?

A. That is right.

Q. And how long did he work until you finally discharged him that evening?

A. To the best of my recollection, he worked until about 11:30.

Q. All right. And the Clowers cat was still working?

A. That is correct.

Q. And what were they doing?

A. They were on top of the bank, dozing material out on top of the patch, raising the patch.

Q. Now we are talking about the first patch?

A. That is correct.

(Testimony of Grant Gordon.)

Q. And Terhune left about 11:30; and then what time was it you began to notice this vortex?

A. That was about 1:30.

Q. About 1:30. And had the Clowers cat been working continuously during that interval?

A. Practically continuously, yes, sir.

Q. Where was he carrying his dirt from, which end of the break? A. From the south end.

Q. He was working on the south end. During that evening, and before Terhune got away, had Clowers worked on the north end at all? [600]

A. He was on the north end, servicing, when the first overtopping occurred.

Q. You mean servicing——

A. Servicing his cat, putting in lubricating oil and gasoline.

Q. And then did he go back and continue to work on the south end?

A. Yes; he went back first on the cofferdam.

Q. And stayed on the south end?

A. Yes, sir, that is correct.

Q. And the work on the south end was done by Terhune? A. That is correct.

Q. Now, after the second break how long did it take that water to run out before you could get in to the base of the canal again? It took place——

A. I don't know that I could answer that exactly. It took most of that day.

Q. Well, it went out at about what? 1:00 o'clock?

A. That is right.

Q. On what day?

(Testimony of Grant Gordon.)

A. That would be Thursday morning.

Q. Thursday morning. And then when were you able to get in to go to work?

A. Well, it appeared obvious that there was no chance that day, so we organized our crews for the next day.

Q. That would be all day Thursday? [601]

A. That is right.

Q. Beginning at 1:00 o'clock in the morning?

A. That is right, but I can't tell you when it completely ran out that night.

Q. That is right. Well, anyhow, it ran Thursday and Thursday night——

A. I don't believe it ran Thursday night.

Q. You don't? A. No.

Q. What is your best judgment as to when it ran out to the point where you could go to work?

A. Oh, I don't know. Sometime during Thursday night.

Q. Sometime Thursday night.

A. You understand our crews were almost completely exhausted and were at home asleep during that night.

Q. I understand, and you did a very noble job of exposing yourself. Then when the water finally receded to the point where you could go to work, you took the cats in, as shown by these exhibits, and started cleaning off the floor of the canal so that you could go to work?

A. This was in the second break?

Q. The second break. A. Yes.

(Testimony of Grant Gordon.)

Q. How much erosion in the floor of the canal did the second break cause? [602]

A. Oh, something less, considerably less, than the first break. It is difficult to distinguish which was which, because the two went together.

Q. That is what I was going to ask you. The erosion from the second break got right back through to the first break?

A. That is true. The erosion came down through the soft material and into the hard material quicker.

Q. And did it erode further on to the north than the first break had caused?

A. Not seriously, not noticeably. There wasn't much water in that direction.

Q. Now, when you got in and determined what was the cause of the second break, you put the cats and dragline in to assist there? A. Yes.

Q. And how much of that bank did you take away with your dragline, or your dragline and your dozers, north of the second break?

A. We set a dragline as far inside on the roadway as we could safely set it, then we dug a trench with a yard-and-a-half bucket. The slope was quite steep. I would guess that we took away probably fifteen feet laterally, horizontally, and sliced fifteen feet thick from the inside of the outer bank,—is that what you are asking me?

Q. I am not at all familiar with what you did there. That is [603] why I am asking these questions. Did you cut across the bank with your dragline?

A. Across the bank?

(Testimony of Grant Gordon.)

Q. Yes.

A. No, sir; we were cutting parallel with the bank.

Q. Parallel with the bank and back about fifteen feet from the edge of the bank, the inside edge?

A. From the inside toe.

Q. Now, wait a minute. I am not so sure that I followed you. You were cutting from the inside of the lower bank?

A. The dragline was setting on top of the bank.

Q. Yes.

A. As far inside as we could safely set the dragline. The trench automatically followed, then, the center line of the machine.

Q. You were digging the earth from the inside of the canal?

A. That is correct.

Q. What did you do with that earth?

A. We put that earth into the bottom of the canal and then spread it upstream, mixed it with gravel, and used it to fill the bottom of the canal.

Q. Now, then, what was the nature of that earth as to being water-soaked or otherwise?

A. The stratum below the bottom grade of the canal which I referred to was completely saturated.

Q. That was completely saturated?

A. Yes, sir.

Q. And how high up on the bank did you find saturation?

A. Well, there was some saturation on the face of the bank up to the water line for some distance.

(Testimony of Grant Gordon.)

Q. And how far in, Mr. Gordon, into the wall of the canal?

A. Well, I remember no evidence of saturation in more than two feet, except in this one stratum. There was some moisture, but not saturation.

Q. Well, all right, was it sufficient to cause you to take out that entire bank there?

A. No, sir. The thing we were rooting for was the weak stratum underneath.

Q. Well, what did you find?

A. That one stratum was the only thing which we found which caused me any concern.

Q. Well, I don't care about your concern, but what I am after is facts, now, as to how far that bank was either saturated or very wet? I am speaking now of the bank north of the second break.

A. Yes. The saturation was confined to this stratum. The——

Q. That was at the base of the bank?

A. Opposite that there was some saturation of the inner line of the canal for some two feet.

Q. And how far up and down the canal was that condition? [605]

A. I think that was common throughout the canal. The inner side, the water surface, was saturated.

Q. I see. That would be, then, over a distance of four or five hundred feet?

A. Yes, sir. I think that is perfectly normal. I would expect that anyway.

Q. And, of course, in the spots where the break occurred you are not prepared to say how far in

(Testimony of Grant Gordon.)

that saturation took place? A. No, sir.

Q. The only point that you are now testifying about is the remaining portions of the canal bank that you made this test on? A. That is correct.

Q. And how far down the bank on the lower side did you carry out that experiment?

A. We dug the trench, continued for over three hundred feet below the second break, downstream from the second break.

Q. And you found that condition on the inside bank in as far as——

A. We followed the condition in the stratum until it completely cleared up. We went past the end of the saturation in that lower stratum.

Q. And you found the inner bank saturated to the extent you testified to for about that same distance? A. That is correct. [606]

Q. Now, was that stratum—let's talk about that just a minute—was it dipping outward and down toward the valley about the same as the other stratum that was exposed there?

A. I don't believe I could tell from looking at one side of the stratum which way it was dipping. As far as it was exposed in the trench it had a slightly concave attitude and dipped down slightly to the north. That is, as we went north in the trench the stratum dropped slightly.

Q. Would that be what the other witnesses have called a rake?

A. I have no idea what Mr. Merritt meant by "rake."

(Testimony of Grant Gordon.)

Q. Well, would you say that was a rake or dip in that stratum, or strike?

A. A dip refers to a plane. I would describe it simply as a slightly curved surface.

Q. That would be a dip. Now, what is a strike? What is your idea of a strike?

A. Well, a strike is theoretically a horizontal line in a stratum which would mark its intersection with a horizontal plane.

Q. That is right. And then what would be your idea of a rake? Doesn't that indicate a slope in one direction or another?

A. I haven't any familiarity with the term "rake" in connection with strata.

Q. All right, then, forgetting technical terms, didn't that stratum have a slope to the north and also a slight slope to the [607] east?

A. I suspect it had a slope to the east, but we didn't crosscut it in that direction so I can't be positive.

Q. Anyhow, it was a slope away from the upper bank of the canal? A. That could be, yes.

Q. Did it have the same slope and appear to be the same type of an outcropping as that outcropping shown in Exhibit No. 70, on top, above the ditch? A. This is 70?

Q. That is right; and I am calling your attention to the outcroppings above the ditch, in the center of the picture there.

A. You are referring to these——

(Testimony of Grant Gordon.)

Q. I am referring to those dark substances right where you have your ruler right now.

A. Here (indicating) ?

Q. Yes.

A. In general, these appear to slope to the east, that is correct.

Q. Yes.

A. I would like to point out, though, that there are changes in the dip exposed——

Q. Yes, I understand that.

Mr. Hess: Let him explain it. [608]

Mr. P. J. Gallagher: Stay right on the one I am asking you about, then you can make your explanation afterwards. Now, was the stratum you found in the bottom of the canal similar to the ones exposed there in 70, the ones we have just been referring to?

A. I will agree that they are of the same geological nature, but I will have to point out that they change in engineering characteristics quickly and widely.

Q. Well, you can do that when your counsel takes you over, Mr. Gordon. Now you may take the stand. When you finally finished up your complete repairs you had built an entire new bank on the lower side of the canal?

A. It amounted to that for a distance completely across both breaks and some distance both upstream and downstream.

Q. And you had also cut your key wall into the bed of the ditch and below the bed of the ditch

(Testimony of Grant Gordon.)

for some distance, hadn't you?

A. That is correct, and some additional distance.

Q. And some additional distance, yes. And that was the only practical and efficient way of stopping the seep in that substratum, was to key it all and fill it with impervious material?

A. Well, that was the only quick method at the time.

Q. And it was the efficient way?

A. Yes, I think it is. [609]

Q. As a matter of fact, since you made that type of repair the ditch isn't leaking along there?

A. To the best of my knowledge, it is not.

Q. I think we could agree on that. Now, when you started to clear away the debris from the second break how far back were those banks entirely water-soaked? You spoke something about it being a sort of a loblolly that you ran into there.

A. Well, I testified that the inner face of the outer bank was soaked for a distance of about two feet. The wettest stratum we found was the one below the bottom grade of the canal. That had very little structure.

Q. By that you mean it was almost fluid mud?

A. That is right. A slight disturbance would just break it down completely. If you kicked it with your foot it would collapse, it would break down into almost quick sand.

Q. Did you hear the testimony of Mr. Terhune to the effect that when he drove his cat over that

(Testimony of Grant Gordon.)

area it would somewhat give? Did you hear his testimony?

A. I heard his testimony, yes.

Q. Now, when you say that that portion was so weak there that it would give way with any kind of shock, would you think that Mr. Terhune's testimony experienced about that same kind of effect?

The Court: Now, just a moment. You can't expect him to pass on the conclusion of some other witness. [610]

Mr. P. J. Gallagher: No. I am sorry, your Honor. I withdraw that.

Q. Anyhow, that structure there was so weak that you say almost any shock would have taken it out? A. I wouldn't go that far.

Q. Well, you said that if one would kick that vigorously it might——

A. What I said was that if you would kick it with your foot the structure would break down.

Q. Oh, I see; and not go out?

A. It would break down, it would reduce in volume and form almost quicksand there, a quicksand characteristic, but you had to disturb it to get that.

Q. And that is what you found when you got into that second break?

A. In the canal bank just downstream from the second break, yes, sir.

Q. Now, were you familiar with the fact, or the alleged fact, that the ditch was leaking, or that there was evidence of water rising—I will put it

(Testimony of Grant Gordon.)

that way—in the Shaw field for the whole distance under both of these breaks?

A. I don't know just how to answer that question. I heard the testimony to that effect but I don't believe it.

Q. I see. Well, if those are the facts, wouldn't that indicate that there was seepage getting through the canal [611] walls there, either below or above the water line, or above or below the bottom line of the ditch?

A. Well, I think we could agree that if there was seepage there must be a seepage somewhere, yes, sir.

Q. Yes; and you will also agree, won't you, that if there was seepage that it was coming from a water supply, a water source?

A. I think that is correct, yes, sir.

Q. And you will go one step further and say that it had to come out of the ditch, won't you?

A. I think in large part.

Q. Now, were you familiar with the ditch before the break and before it was repaired?

A. No, sir.

Q. You were not. What is your estimation as to whether they had ever lined the inner bank prior to the repair?

A. I haven't any.

Q. However, you did line it?

A. Yes, for a long distance on the outer bank.

Q. So your repairs that you made, Mr. Gordon, would not only put in a key wall far enough down to shut off any water that came in through these

(Testimony of Grant Gordon.)

strata, but rebuilding the canal bank and also lining the canal bank?

A. That is correct. We reinforced it for a long distance upstream and downstream. [612]

Q. And since that time it has been holding?

A. As far as I know, yes, sir.

Q. Now, knowing what you do know as a result of checking that break, would a core wall just simply laid on top of the surface, if you call it a core wall, would that have any effect at all on shutting out the water that you found down below?

A. It had this effect, it would add weight to the material.

Q. Well, any dirt would add weight.

A. That is correct.

Q. But, other than adding weight there, it had no effect at all, had it?

A. Not on seepage below the limits of the core, that is correct.

Q. And if a core wall was built to the extent of spreading out three cubic yards of earth over a distance of 150 feet and six to eight feet wide, would that small amount of selected material have any appreciable effect on stopping the leak in the canal?

A. I think not.

Q. Now, you made a statement this morning that you did not see or there is not at the present time any seepage above the break or below the break within any distance that would indicate to you that there was any water coming from this ditch. Are

(Testimony of Grant Gordon.)

you familiar, Mr. Gordon, with the very perceptible leak in the Hust field just south of the Shaw ranch?

A. Yes, sir. [613]

Q. And how far would you say that is from the canal?

A. That is from fifty to seventy-five feet below the outer toe.

Q. And about that far away from the canal?

A. That is right.

Q. You wouldn't say that was coming from the farmer's ditch? A. No, sir.

Q. That is probably coming from some subterranean source there? A. Correct.

Q. And how much of an examination did you make of the seep that is running in the canyon north of where the break occurred?

A. I have been around that area considerably, before and during the break.

Q. And it was running a perceptible stream even antedating the time of the break?

A. So I understand.

Q. And there was a very substantial tule growth along there? A. Yes, sir.

Q. Indicating that that water is coming from some substantial source? A. Correct.

Q. And the only other source would be from the canal itself? A. That is, in the main, yes.

Q. Now, we will agree on another thing, and that is, I think, that after you had pared down this inner bank, the mountain side [614] bank, that no work was done in silting that at all?

(Testimony of Grant Gordon.)

A. That is correct. None appeared necessary.

Q. Is it your opinion that the material in the upper bank is impervious to water or would not disintegrate if water was applied to it?

A. Well, that isn't the same thing. There are two questions there.

Q. Well, I will ask the first one first. I don't know enough about hydraulics to see the difference.

A. The material in place is quite impervious, tight.

Q. And if the materials were displaced and put in water would they absorb water?

A. I should think so.

Q. And then what keeps them from absorbing water when they are in place?

A. I think it probably would if water were supplied.

Q. Well, it is supplied, isn't it, by the ditch?

A. Yes, if there is water in the ditch.

Q. Well, water is in the ditch about seven months a year, isn't it?

A. That is correct.

Q. And to a depth that covers that entire area?

A. Well, I hope we are talking about the same thing.

Q. I hope we are. If not, we are wasting time.

A. You are referring to this stratum right down here at the [615] water line (indicating)?

Q. That is right, in Exhibit 71.

A. It is certainly obvious that water is entering that stratum there by capillarity.

(Testimony of Grant Gordon.)

Q. That is very obvious.

A. That is correct, but I never knew of the phenomenon of capillarity, high capillarity, to be present at the same time and at the same place where there is high permeability.

Q. Now, then, calling your attention to that part of the upper bank that is exhibited and shown in Exhibit No. 73, I ask you if you would not find a condition there where the water would permeate and also be subject to capillary action?

A. This loose material would soak up very quickly.

Q. Yes.

A. The loose material which is weathered on the face of this stratum would soak up very quickly, but I will say that if you clear this stratum off and get back to firm material in a foot or two it will be tight.

Q. Well, what you are saying is that if you could keep cutting off the mud you might beat the water back, and the action of the water, and you might get back to dry material?

A. What I am saying is that if you examine this stratum back far enough to be undisturbed it is tight.

Q. And how far back in there would you have to go in there to find tight material? [616]

A. I would think you might not have to go back beyond two feet.

Q. Now, if I understand it, when your ditch was

(Testimony of Grant Gordon.)

completed you cut all that material down and spread it over the bed of the canal?

A. That is correct.

Q. So that whatever material you see on the bottom of the canal now is something that has slid off from the upper banks in making your repair?

A. It has slid off and has been 'dozed off.

Q. As a matter of fact, there has been no 'dozing in there since you finished your work?

A. I wouldn't know.

Q. That sand and gravel in there, that chalky substance, that hasn't been 'dozed off?

A. No, sir; that has fallen off.

Q. That would indicate that the material that has fallen off there through the years——

A. That is right, but it does it by capillarity.

Q. You will not admit that that water might not soak in there by gravity and get under the canal?

A. I am not sure that I understand your question.

Q. I say, are you willing to admit that water might soak back through that stratum and by gravity get down under the bed of your canal?

A. Well, I would have to presuppose that there is something below this stratum which is more porous than the stratum itself.

Q. Well, you would hit a stratum down there that was so porous that it was like quicksand?

A. That is correct.

Q. And are you willing to admit that this water

(Testimony of Grant Gordon.)

that soaked through the bank of the canal got down through there?

A. I will admit that that would be entirely possible, but it needs some method of passage.

Q. Now, doesn't it show that that stratum reaches down below the bottom of the canal?

A. Not that stratum we have been talking about.

Q. And no tests have been made?

A. Yes, sir, we cleaned that off. I examined that time after time, and there are many strata between the one you are talking about——

Q. You are not prepared to say that those strata are not entirely connected?

A. They lie one on top of the other.

Q. And you are not prepared to say that water did not get down into that stratum?

A. No, sir.

Q. And evidently, Mr. Gordon, there was a very great amount of water got into those lower strata?

A. There was a considerable amount of water in the porous [618] stratum that I have referred to, yes, sir.

Mr. P. J. Gallagher: Will you give him our Exhibit No. 28.

Q. Will you examine that exhibit, Mr. Gordon, and particularly as it shows the bed of the canal to your right-hand corner, and then say whether or not, in your judgment, water applied to that type of stratum would not work its way down?

A. These beds or strata are essentially hori-

(Testimony of Grant Gordon.)

zontal.

Q. You mean they lay flat?

A. That is correct. In place, undisturbed, they are very massive. This particular bed that you are referring to in the right-hand corner here is quite massive, quite dense, and unless something occurs, some joint or something of a similar nature, it is quite impervious to water moving in a vertical direction. The tendency is more for water to move along horizontal planes.

Q. Well, it is just loose gravel, it is just rock, disconnected rock, there for two or three feet depth in that stratum, isn't it?

A. That is correct, but you must consider that this material has been eroded and dissected by the rush of water. It is not in its native condition.

Q. And you think before it was eroded it was impervious?

A. I think it was relatively tight, yes, sir.

Q. Now you are using the term "relatively" there, and that is coupled up with the testimony of another witness here indicating that it might slowly percolate—— [619]

A. I will agree that water will go through the formation, but at a very slow rate.

Q. And assuming that this canal was built in '34 and it went out in '46, it evidently did take a long time to percolate down.

A. I can repeat that it percolated at a very slow rate.

Q. Now, one more question: When you com-

(Testimony of Grant Gordon.)

pleted your work on the first break did you reach a conclusion as to what caused that first break at that time?

A. I had formed a conclusion as to what I thought caused the first break as soon as I had examined it, yes, sir.

Q. And what was the conclusion that you then formed, borne out by your experience in fixing it up?

A. My conclusion was completely upset by what I saw at the second break.

Q. All right, what was your conclusion as to what caused the first break that you arrived at at the time you fixed it?

A. I concluded that it might have failed by failure along some joint in the underlying stratum. I couldn't find such a joint by examination up and down the stream, but that was the best conclusion I could draw at that time.

Q. And then when you went on to repair the second break you changed your conclusion you had arrived at at the time of the first break?

A. I watched the second break. I was standing right at it.

Q. And your conclusion now is that both breaks were caused [602] by the giving way of the stratum at the canal bank?

A. I think the causes were very similar.

Q. Have you given any consideration to the possibility that where these two breaks occurred the seepage into the bank may have been greater

(Testimony of Grant Gordon.)

than two feet and may have seeped clear through, causing a leak on the other side?

A. Yes, I have considered that.

Q. What have you to say as to the probability of that?

A. I think the probability was small, because we examined very carefully the portion of the ditch bank which went out in the second break before it broke. There was no evidence there of excessive seepage.

Q. There was no place near where there could be a demarkation between the waters that seeped into the bank and the waters that were below the surface?

A. That is a pretty difficult determination, yes, sir.

Q. Did you hear the testimony of one of the witnesses to the effect that he was directed to go upstream and turn down some water?

A. Yes, I heard the testimony.

Q. I think that was Mr. Percy. Who in your engineering crowd would be the one who directed him to do that? Would that be you?

A. I made my request to Mr. Spofford.

Q. I see. You don't have any recollection of directing Percy [621] or any others?

A. No, I didn't issue orders to the watermaster.

Q. Now will you give us your best judgment on the amount of water and the rate of flow of the water that was in the canal at the time that it overlapped the last time?

(Testimony of Grant Gordon.)

A. Well, that is a very sketchy thing to estimate without some knowledge of the velocity. The water was moving very slowly. The total of water moving past the break is a summation of the amount that was in storage at the cofferdam plus the water that was flowing on top. In trying to estimate the area I would say something around a hundred second-feet. That is sufficient to fill the canal. I promise you the canal was full, but it was moving at a very slow velocity, so the actual quantity was low.

Q. What would hold that water back and make it move slower than the normal flow down the canal?

A. In the first place, the canal below the cofferdam was much wider than the section at the cofferdam. We had overdug it.

Q. Was there anything below the second break to impede the water flow?

A. In the second break the banks of the canal were very dry, but there was no encroachment below the second break.

Q. What is worrying me is how you got so much water into that new canal so fast. Now, you had your canal bank built [622] up to a foot and a half to two feet higher than normal, you say.

A. Yes, sir.

Q. And then your water came down in such amount that it ran over. A. Yes.

Q. Now, what I can't understand is how you could get that much water down there so it would

(Testimony of Grant Gordon.)

run over the bank so soon, when you could regulate it up above.

A. Are you asking me a question?

Q. Yes.

A. You didn't make a question out of it.

Q. How did that happen?

A. The best answer is, I don't know.

Mr. P. J. Gallagher: Okeh. That is enough. That is all.

Redirect Examination

By Mr. Hess:

Q. Referring to that exhibit there, No. 71, again, and to what has been referred to in previous testimony as half-moons, you describe that condition as indicating a falling off there caused by capillarity, is that right?

A. That is correct. The material above the wetted line showing in 71 is essentially a silty material, having no great strength in itself. The weathering of the stratum just beneath it removes support so it falls out in these half-moon shapes.

Q. And that silty material has a higher degree of capillarity, [623] as I understand your testimony, than this stratum that shows here that you said is hard, that is designated where the gravel shows, that is, the gravel in 73?

A. Oh, I don't know as I would say it was higher, but they both exhibit capillarity.

Q. Now, what do you mean when you say that

(Testimony of Grant Gordon.)

you can't have both capillarity and permeability at the same time?

A. Well, capillarity is a phenomenon which depends on surface tension, and the phenomenon of capillarity takes place only in fine, very fine, tubes or pores. If the pores or tubes or openings are sufficiently large to allow what we call high permeability, then they are entirely too large to exhibit the capillary phenomenon.

Q. Now, then, you were asked something about whether the ditch was lined prior to the repair. State what you noticed as to the formation. Was that lower bank built up, other than on or near the top, by a fill, or was that in a cut, with the natural earth?

A. Well, the entire wetted perimeter of the watered section was in cut.

Q. And that is the lower bank, is that correct?

A. The lower bank.

Q. And that lower bank was natural, solid earth, is that right?

A. That is right, yes, sir.

Q. What investigation would be necessary to disclose the [624] stratum four feet below the bed of the canal that you found which was porous, the material of which you could break up by kicking with your feet, as you have described?

A. Well, it was necessary to dig down to find it. You had to excavate below the canal grade to reach it.

Q. And state whether or not before your first repair you had run out, entirely out, of that type

(Testimony of Grant Gordon.)

of material, when you made that first repair—whether you had or had not? That is, whether you had cleared it all out for your first repair, that you had found there?

A. Well, in the first repair we found no evidence of a weak stratum in the bottom or the abutments of that break. The strata change rapidly up and down the stream in their manifestations, the degree of cementation and quality changes rapidly.

Q. Well, had you dug down to that stratum in your repair of the first break?

A. We dug down past where it would normally have been found in the same position there as it was downstream. It may have existed for a short distance in the break, but that evidence was gone.

Q. I see; and you had cleared that material out, dug how low below the bed of the stream, in your first repair, and how far up above and below on your repair work in the first repair?

A. Well, we had cleaned the bottom of the first repair completely down to tight, firm material. We had beveled the [625] patch upstream and downstream by digging into the wetted side of the lower bank until we were into firm material.

Q. Was there any indication whatsoever that you found that would indicate a stratum four feet or more below the bed of the canal where the second break occurred?

A. The erosion of the second break had dug down past where this stratum would normally be

(Testimony of Grant Gordon.)

expected to lie. When we rooted into the upstream shoulder of the second break under the first patch still standing we found evidences of the original material there just downstream of the old cutoff trench. The cutoff trench was still intact and still in firm materials there. The weak stratum, if it existed through the second break, was washed away, was gone, and the downstream abutment of the second break still looked solid and sound. It was only after we had dug into it with a dragline for a distance of ten feet or so that we again encountered a weak, incompetent stratum.

Q. At what level below the floor of the canal?

A. That was some four feet below the bottom grade of the canal to the top of the stratum.

Q. And you state that was very soft, as I understand, but the lower bank of the canal in that region only showed softness or permeability some two feet in the side of the canal, is that correct?

A. That is normal to the water surface. [626]

Q. What is that?

A. Normal to the slope of the bank, yes.

Q. Had you done everything, in your own opinion, according to best engineering practices, in cleaning out the bed and the sides of the canal and to the full length that would be regarded as necessary from investigation and observation, in making your first repair?

A. Well, to the best of my knowledge, I did. I did everything I knew how to make that patch stick.

Q. And would that answer apply based upon

(Testimony of Grant Gordon.)

your previous experience and your studies of the past?

A. It certainly would, yes, sir.

Q. Your attention was called to the stratum shown in Exhibits Nos. 70 and 79. Can you take your pointer and point out any stratum condition that shows complete breaks in the stratum that is shown in that picture and, if so, describe any condition that you see there and that you have observed, since you have looked at the pictures, on the ground?

A. In Exhibit 70 there is a marked uncomformity between the stratum shown in the extreme left-hand edge of the picture and that that appears on the ground. There are two distinct dips here. One stratum cuts off and intersects the other one at a suitable angle.

Q. And that is all shown in the little distance of that second white spot, we will say, from the larger hill there where the [627] stratum is shown?

A. That is correct.

Q. That is on the left.

A. There is another one shown in Exhibit 79.

Q. Now, pointing to that—all right, and where does that show, in what——

A. In left center of the photograph, just above the canal.

Q. Is that shown definitely by a dark spot there in the picture?

A. That is correct, and it is very easily evident on the ground.

Q. Yes; and how would you describe that as it is shown on the ground? How would you describe that?

(Testimony of Grant Gordon.)

A. Well, that is as a result of a change in the manner and rate of sedimentation in the old place in which these beds were formed, and it results in a very sharp change and dip in the character of the stratum.

Q. It is in a very short distance, would you say?

A. Yes, sir, it is in a distance of less than thirty or forty feet.

Q. Now, then, you were asked about water coming down—that is, for the first time you had asked for that water. Had you filled in the bottom of the canal with the silt that had been taken from the top of the canal?

A. That is correct, we had covered the entire bottom to some degree. [628]

Q. And you state the water that was turned down did not flow through there with high velocity, as I understand?

A. That is correct.

Q. Yet it did overtop?

A. That is correct.

Q. And your purpose of putting that through, as I understand, was to get water through as quickly as you could to the irrigators below?

A. That is correct, yes, sir.

Q. But it went higher than was anticipated?

A. That is correct.

Q. And was ordered off immediately, as I understand it?

A. That is correct.

Q. In this overflow, in your opinion, did it on either one of those occasions have anything to do with the second break?

A. I think not. I think the overtopping had

(Testimony of Grant Gordon.)

nothing to do with the breaking of the canal the second time.

Q. Did you, according to your best judgment, and did you believe, that the ordering of the water at the time you ordered it to go down the canal, do you feel, that that was in accordance with good engineering practice?

A. I saw no reason to doubt that it was not. It seemed perfectly proper to start the flow of water through the canal at that time. We were set up to continue our repair, to raise the fill, and to blanket the canal. I think it was entirely—— [629]

Q. And how long after the second overtopping was it that you observed the vortex?

The Court: It was 1:30 in the morning. What is the use of covering this ground three or four times.

Mr. Hess: I think that is all.

Recross-Examination

By Mr. P. J. Gallagher:

Q. Just one question, Mr. Gordon: After you had made this first repair did you carry out any experimentations, like drilling in the base of the canal, to determine whether or not there was a similar stratum down where the second break took place?

A. After the first repair?

Q. Yes. A. No, sir.

Q. And before you started to make any repair did you take any borings or make any experimentation to determine how far down the mud was?

A. We had no suspicion of a——

(Testimony of Grant Gordon.)

Q. No, the question was, did you? You can say Yes or No on that.

A. Well, you said "this mud." I had no indication of mud.

Q. Well, maybe I used the wrong term. Did you make any borings at all?

A. No, sir. [630]

Q. When did you send the order in to cut the water off? A. I didn't send it in, sir.

Mr. P. J. Gallagher: I see. That is all.

The Court: Now, if you had not been influenced to a certain extent by the necessity of getting water to these irrigators, which was a very proper consideration to have in mind, you would probably have made further investigation as to what caused that break, wouldn't you?

A. We might have. We had——

The Court: Well, you knew it was not a natural thing for a canal to break.

A. No. We were concerned about it.

The Court: And you didn't know what the reason was? A. No, sir.

The Court: You had no explanation for it at all?

A. We made an assumption, was all.

The Court: You made an assumption which proved to be incorrect?

A. That is right.

The Court: Now, as I understand, if you had had plenty of time you would not have been in doubt as to the assumption? A competent engineer would

(Testimony of Grant Gordon.)

have found out what the trouble was, or have done the best he could to find out?

A. I would think so.

The Court: As a matter of fact, you can find out, can't [631] you?

A. We certainly try. Sometimes we miss, but we usually do.

The Court: If a competent engineer was trying to put in a structure that he knew would stand he would find out what was there, wouldn't he?

A. Yes, sir.

The Court: Now, as you develop it at the present time, there was a structure beneath both the first and the second breaks which during the course of time had become permeated with water, or had become saturated with water, to such an extent that it weakened and under certain conditions would go out; that is your present theory?

A. Might I explain that, please?

The Court: All right.

A. I arrive at that by my observation as I have dug through that stratum and I infer that that is what happened at the second break.

The Court: Now, on the other hand, you repudiate the theory that that slopes down as shown in Exhibit 80, which is the theory propounded by the plaintiffs?

A. I examined the stratum across the floor of the canal at the break very carefully. It is not possible for the stratum which they refer to at the water line

(Testimony of Grant Gordon.)

to dip down and go through there at the point of the break.

The Court: Now, if you had been trying to be sure that [632] this break would not have occurred you would have then made the experiment that you subsequently made; that is, you would have put your dragline down to see what was below in a place beyond the break on each side? That is what you subsequently did.

A. That is right. I don't know if this is proper. Could I explain that a bit?

The Court: Yes.

A. The first break we had no evidence that upstream or downstream we had any unsoundness. That canal bank had stood for twelve years and, to the best of my judgment, if I could put a patch in there that would hold the canal should go on serving. At the end of the second break I realized that I had missed something the first time and that there was not going to be any run-around on the second time, I can assure you. The evidence was not there, even in the second break, that I could point to and say that "this is what caused it," but I wanted to be sure and I was not going to be embarrassed again by another break, so I instructed that dragline to dig in there and dig deep to see if I was again missing the point, and immediately ran into the reason.

The Court: If you had not been influenced by the desire to get water down to the irrigators you would have done that the first time, wouldn't you?

(Testimony of Grant Gordon.)

A. Well, we might have gone further, but I don't think a [633] great deal further, because we had no suspicion, your Honor.

The Court: Well, it isn't a question of suspicions. Suppose you were constructing the Bonneville Dam—now, you don't mean to say that you would build that dam in a place where there would be any condition that would take it out?

A. No, sir, we would recognize that——

The Court: And if an engineer did build the Bonneville Dam in such a situation that it would be washed out by possible floods such as we have now, you would consider that incompetent engineering? A. Yes, sir.

The Court: That is right. Now, then, here is your situation here. It was unnatural and improper and unexpected for this canal to go out.

A. That is right, yes, sir.

The Court: And, under those circumstances, as I say, if you were not influenced by the necessity of moving water through you would have stopped to plug up all the loopholes, wouldn't you?

A. Well, you are asking me a tough question, your Honor. A dam must not fail. We recognize a tremendous responsibility with it. We recognize that we are not able from an economic standpoint to test every inch of a canal bank as carefully as we must test the abutments and the foundation for a dam. If we follow that line of reasoning, then we would be forced [634] to immediately get out there and test every inch of that outer canal bank now.

(Testimony of Grant Gordon.)

We can't afford to do that, so that I think I am right when I say that I question whether we would have done a great deal more exploring if we had had more time after the first break.

The Court: Well, you did it after the second break.

A. Because I had obviously missed something on the first one.

The Court: Well, but then——

A. If the first break had held then we would have assumed that I had guessed it properly, that I had reconstructed it properly.

The Court: Well, all right. Now let me ask you something else. You know that this seepage is down in the Hust field.

A. Yes, sir.

The Court: And you don't know where it comes from.

A. That is correct.

The Court: And you know that there is some seepage to the north.

A. Yes, sir.

The Court: And you don't know where that comes from.

A. No, sir.

The Court: Have you missed something again?

A. Quite possibly. Quite possibly. We will continue to observe that for any clue that will tip us to anything which we consider, which we can possibly consider, dangerous. Seepage per se is not necessarily dangerous. [635]

The Court: Well, I understand, but with conditions of this sort and with a possibility of damage that one of these breaks can cause, don't you think

(Testimony of Grant Gordon.)

that competent engineering would require, perhaps, that you should line the canal with concrete here, after the warning that you have had?

A. Well, first I would like to explain that lining with concrete is not the answer to all the problems in a canal by any means.

The Court: Well, it is the answer to this one, isn't it? Lining with concrete would avoid any break?

A. Well, that gets into economic conditions. We couldn't afford to line the whole canal.

The Court: Well, I am not talking about lining the whole canal. Here is a specific situation in which you have had considerable trouble. Why not, after the first break, say you will line it with concrete here?

A. Because we do not consider concrete lining as the best canal in earth section. We think that an earth section is possibly safer, many times, than the concrete canal. Just lining with concrete is not the answer to safety. Concrete canal linings leak. They have never built a tight one yet. They have built up seepage pressures behind, and you have this element of risk in them, that you think you have something better than you really have, and that is something that is a source of great concern to an operating company. [636]

The Court: Well, can you build a canal that won't break?

A. I think not, no, sir. I don't think it is possible to make a canal that is absolutely perfect. It

(Testimony of Grant Gordon.)

is certainly a difficult engineering problem if you have to consider cost.

The Court: Well, you don't have to consider cost.

A. We have to consider cost to have an economically feasible project.

The Court: Well, but you make your recommendations as to feasibility. Now, if you are not building that kind of a canal, that enters into the recommendations as to feasibility.

A. That is correct.

The Court: In other words, you go to Congress and you say, "now, we can build it, and when we build it it will be an efficient canal."

A. That is right.

The Court: Now, how safe are we going to make it? Isn't that up to you, in making your recommendation of feasibility, as to how safe you are going to build the canal?

A. That is right.

The Court: You can build them so they won't break, almost to a surety?

A. Yes, we can approach that point.

The Court: And isn't that a consideration that you have to take into account when you make your recommendation as to feasibility? [637]

A. Yes, sir.

The Court: Well, now then, we eliminate cost, then, don't we?

A. I wish I could understand exactly what your point is there. We build these canals according to the best standards we know. We are charged with

(Testimony of Grant Gordon.)

trying to develop projects which can be used. We could rule out practically any project that I know of that we are coping with now if we were charged with making them so safe that there was no human possibility of a break. We could not continue the reclamation program if we were charged with making structures and canals which could not possibly fail. Our job would be through. We couldn't go further.

The Court: Well, the only thing you are saying, then, if that was the circumstance, if that was the way it was viewed, that you would recommend against feasibility?

A. No, I think that life and progress to go ahead must take some calculated risk. We take a risk when we start down the stairs; we take a risk when we cross the street. If we played it absolutely safe, I am afraid we wouldn't get very far. The engineer's problem is to see if we can develop a project which is reasonably assured of success. He can't be absolutely positive. There are factors beyond his control, which he cannot completely control.

The Court: And you think that just because a structure [638] happens to be hidden under, as here, three feet of ground, a competent engineer is not required to recognize that?

A. Well, I think he is required to fix it if he knows about it, if he can find evidence that it exists. We will not pass one of those things if we know that it exists, but we are limited by economic considerations as to how far we can insure.

The Court: Well, but after you know of one

(Testimony of Grant Gordon.)

weakness in a thing, before you turn water in, as I say, if you were not influenced by the necessity of getting water in to these crops, you would have insured, wouldn't you?

A. If I had known that that stratum existed down there or any threat existed to that canal I would have fixed it.

The Court: Well, you did know that there was a threat?

A. I am sorry, sir, but I don't recognize an implied threat from there out unless there was some evidence other than the break itself. I have seen similar instances in which all the cause was completely removed. I think that all the cause of the first break, the very proximate cause of the first break, had been removed at the time of the break.

The Court: Well, all right, we are getting into factors which I think are not within your field, so I won't ask you anything further.

A. That is correct.

The Court: Do you desire any examination on either side?

Mr. P. J. Gallagher: No, your Honor. [639]

Mr. Hess: No, your Honor.

(Witness excused.)

The Court: Court is in recess.

(Short recess.)

Mr. Veeder: Call Mr. Spofford, please. [640]

JAMES SPOFFORD

was thereupon produced as a witness in behalf of the defendant herein and was examined and testified as follows:

The Clerk: State your full name.

A. James Spofford.

The Clerk: S-p-o-f-f-o-r-d? A. Right.

(The witness was thereupon duly sworn.)

Direct Examination

By Mr. Veeder:

Q. What is your residence, Mr. Spofford?

A. Nyssa, Oregon.

Q. Will you state your age, please?

A. Sixty-four.

Q. Would you give a general statement as to your educational qualifications?

A. I received a B.S. in Civil Engineering from the University of Michigan in 1908.

Q. After leaving the University, would you give a brief statement as to your experience as a civil engineer?

A. My activities as a civil engineer from the time I graduated up until 1926 consisted of engineering surveys, some mining work, and I was with the General Land Office for six and a half years as a U. S. surveyor, and also during that period I operated a farm. [641]

Q. Would you state your experience with respect to the construction, operation and maintenance of irrigation systems?

(Testimony of James Spofford.)

A. In the spring of 1926 I moved to Mountain Home and established an office as civil engineer at that place, and during the next twelve years my work was greatly connected with the maintenance and operation of irrigation districts. I was retained by the Mountain Home Irrigation District during the entire twelve years, serving as their Secretary-Manager. When I went on the job there were three irrigation companies and they were very much disorganized, and during the first six years I reorganized their canal system, making one system for the entire group, and also constructed nine rock tunnels on their upper canal system.

Q. Did you have any other experience besides that, in public office, or anything like that?

A. Yes; in connection with this irrigation system there were three storage reservoirs and also 80 miles of canal. Fourteen miles of this canal was along the Boise River Canyon and was very hazardous ditch. There were nine tunnels and thirteen flumes on high trestles, and it was on more or less moving ground.

Q. You were in charge of the operation and maintenance of those structures, is that correct?

A. That is right.

Q. Now, after leaving that work what did you do? [642]

A. Well, during this same period of twelve years I was also retained by the King Hill Irrigation District as consultant engineer, and from June, 1932, up to December, 1938, I served in that capacity, and

(Testimony of James Spofford.)

their system—a great deal of work was done on their irrigation system, especially the canals. Their main canal carries 300 second-feet of water and it is located along the breaks of the Snake River Canyon.

Q. Was the country comparable to that through which the North Canal follows?

A. Yes, the topography is very similar to the topography here. And I was also retained as a consultant with the Grand View Irrigation District and I had charge of the rehabilitation of that district.

Q. Were you State Engineer of the State of Idaho at any time?

A. I was State Reclamation Engineer of the State of Idaho for three and a half years.

Q. What is your present position, Mr. Spofford?

A. My present position, Irrigation Manager of the Owyhee Project.

Q. Would you state, very briefly, the duties which you have in connection with that?

A. In this position I am in charge of the maintenance and operation of the project. This includes the canal system of 566 miles, 120 miles of drain, 20 miles of power lines, and 90 miles of telephone lines. [643]

Q. Would you state, particularly with reference to the North Canal, what security measures have you taken that it is properly maintained?

A. In the operation of a canal the size of the North Canal, which carries 1100 second-feet at the

(Testimony of James Spofford.)

head, in my organization instructions are given to the three watermasters and the ditch riders to use extreme care in patrolling these canals during the irrigation season especially to look for new leaks or seepage.

Q. What are the duties of your ditch riders?

A. The ditch rider, during the irrigation season, which constitutes about seven months of the year, rides a section—in this particular reach of the North Canal rides the main canal between certain points, and also delivers water to a certain number of water users. Usually they serve about 3,000 acres under each beat or ride.

Q. Was there a ditch rider responsible for the area of canal in this segment?

A. That is right.

Q. And his duties—would you just state briefly what he did along that line?

A. His duties were to ride this section of the North Canal from the intake of the Malheur Siphon up the canal to what is known as North Canal 33.1 lateral, which is some three miles above the break. He rides this ditch every day, seven days a [644] week.

Q. And what are his instructions if he encounters anything which might appear to endanger the canal?

A. His instructions are to always watch for leaks and seeps and to report any of those seeps or leaks that he has seen himself or that have been reported to him by any of the farmers.

(Testimony of James Spofford.)

Q. Are you personally acquainted with the area in which the break occurred? A. I am.

Mr. Veeder: We would ask to have Plaintiffs' Exhibit 82.

Q. Are you familiar with the area directly below the canal breached which is said to be owned by Ben Shaw? A. I am.

Q. Would you state whether prior to the time the canal broke you had occasion to investigate the segment of the canal breached? A. I did.

Q. Would you state to the Court the circumstances under which that investigation was made?

A. When I took the position as Irrigation Manager I came on and took the position in April, 1944, and that summer my predecessor, with whom I was riding, called my attention to this seep in the Hust field and——

Q. Where is that located, now, with reference to the Ben Shaw place? [645]

A. That seep is located some seven or eight hundred feet south of the south line of the Ben Shaw place.

Q. And where is the location of that seep with reference to the toe of the North Canal?

A. That seep is located some six or seven feet from the toe, towards the river.

Q. Proceed with the story as to how you became acquainted with the segment that was breached.

A. During the summer the water was in the canal, and after the water was in the canal in the fall of '44, and also in '45, I examined the—tried

(Testimony of James Spofford.)

to find the cause of this leakage, which we have never been able to stop, and in making this investigation I proceeded up the canal—by the way, there is a sharp bend in the canal almost directly west of this spring—I walked up the canal around that bend about four hundred feet, and also down the canal five or six hundred feet, investigating the bottom and the side slopes of the canal, to try to determine whether there was any strata exposed there which might be opened up by scouring the canal.

Q. Would you explain the term “scouring” for the record, please.

A. Well, scouring is caused by the action of the water against the canal banks and bottom, mostly in the banks, and the most scouring or erosion is caused at the turns in the ditches, the outside turns.

Q. Scouring is another term for erosion in the side of the [646] canal, is that correct?

A. Yes, sir, caused by the water.

Q. Now, did you proceed northward and down the canal in making the investigation to ascertain the cause of the seep on the Hust place?

A. I made the investigation of the canal and down the canal.

Q. How far down the canal did you go in that investigation?

A. Oh, I forget exactly how far. There is a high bank along in this area and I went down below there, oh, seven or eight hundred feet from that turn, probably.

(Testimony of James Spofford.)

Q. Did your investigation go on down beyond where the canal broke? A. Yes.

Q. Would you describe that segment of the canal as it appeared to you in the fall of 1945?

A. In the fall of 1945 that segment of the canal was nearly straight, there was a very little curve in the canal at that point, and to the best of my investigation there was no scouring or exposed strata any place from the curve in the canal above the Hust spring.

Q. Now, that was the fall prior to the time when the canal breached, is that correct?

A. That was the fall of '45.

Q. What was the condition of the bottom of the canal in the segment where the break occurred?

A. Well, it was lined with ordinary covering of silt, seemed to be good tight silt that had washed in there.

Q. Was there anything in the canal indicating a weakness in it? A. No.

Q. Well, describe and continue with your description of that area.

A. Well, the side slopes were in place and the bottom was not scoured or eroded, and the only work that had been done in that area was the riprap in this one turn which was above that Hust spring.

Q. Would you describe the outer bank of the canal at the point where the break occurred in the fall of 1945?

A. The right-hand bank? The lower bank?

(Testimony of James Spofford.)

Q. I am speaking of the lower bank of the canal, yes.

A. The bank of the canal was—you are speaking of the outside slope?

Q. That is correct, the outside slope.

A. ———was dry.

Q. What of the evidences of seep?

A. Well, the first—you mean the first evidence?

Q. Yes. A. Of a new seep?

Q. Yes.

A. Well, the evidence of a seep depends a lot on the soil. [648] A seep naturally raises any salts that there are in the ground. In some areas it will kill vegetation within a few weeks and in other soils that do not contain the alkali, if they would occur in a cultivated field it would kill the—well, it wouldn't exactly kill, but the vegetation would turn, usually, yellow within, oh, two or three months.

Q. Now, would you describe the area below the toe of the canal as of 1945?

A. At that time the farmers' ditch, Shaw's ditch, was constructed quite close to the toe of the canal, and the operator of the place had been farming quite close up to this ditch.

Q. What was the character of the growth above the farmers' ditch, from the toe of the canal on up?

A. Well, there was no vegetation there that I have even seen or saw at that time, except the growth of some willows and a few trees along this ditch line.

Q. Where were those situated?

(Testimony of James Spofford.)

A. Along the bank of Mr. Shaw's ditch.

Q. Did you observe, in your investigation in that fall along that segment of the canal, outcroppings of porous material in the bottom or the sides?

A. No, I did not.

Q. During the spring of 1946—was a ditch rider employed in the spring of 1946 along that segment of the canal? A. Yes. [649]

Q. Are the ditch riders required to submit reports to you of any evidences of seep?

A. The ditch riders report each day during the irrigation season. May I enlarge on this point? I would like to give a little detail.

Q. All right, go into that.

A. On the North Canal the ditch riders are called into the office at seven o'clock every morning and I personally talk to the ditch riders as to their rides of the previous day and their water requirements for the next day or two, and since I have been on this job I have personally called these men or they have called me every morning that the canal is in operation and water distributed to the farmers.

Q. How do you select these men?

A. Well, these men, we try to get qualified men, and preferably men that are farmers and understand farming.

Q. Are they acquainted with the area?

A. In most cases they are.

Q. Are the ditch riders in this instance acquainted with the area?

A. Yes, the ditch rider in this instance has been

(Testimony of James Spofford.)

the ditch rider on the area since the second year after the beginning of the project, as I understand.

Q. Did you observe the field below the farmer's ditch in the year 1945? Did you personally observe it? [650]

A. Well, I noted that crops were growing on this field. I didn't see——

Q. Did you observe it in the spring of—did you patrol the canal in the spring of 1946 prior to the break?

A. Riding—yes, I have ridden on the ditch.

Q. And did you observe the field at that time?

A. Yes

Q. Was it in production at that time?

A. It was.

Q. What did you observe concerning it?

A. I didn't observe anything unusual. I often wondered how he was able to farm so close to his ditch there, which is not usual on many of the other farms.

Q. Were you notified of any seep in the spring of 1946 on the area appearing on Plaintiff's Exhibit 82—that is, the area down here, this 4.3 acres?

A. No, I was not.

Q. Were you notified of any seepage on that area at any time prior to 1946? A. No.

Q. Were you ever notified of seepage on that area? A. No, at no time.

Q. Did you observe the upper bank of the North Canal when you were making your investigation at that time, in 1945 as I understand? [651]

(Testimony of James Spofford.)

A. Yes.

Q. What did that reveal to you?

A. Well, I had noticed during the summer that there was a considerable raise in the dampness along the water line, which an operator usually thinks is a sign of a good bank.

Q. Well, did it reveal anything else?

A. This bank at that time was not as straight as it is at present. During the time of the break the canal was moved toward the hill a few feet. That was—or dressed up. It was dressed up some on account of the scour that was made by the break. There was probably a little more slope.

Q. Was there moisture in the bottom of the canal at that time when you went through there?

A. No.

Q. Would you describe the construction of the North Canal in the segment which broke?

A. The North Canal in the segment where it broke I always considered was in cut.

Q. What is the significance of the fact that the canal was in cut?

A. Where the canal was entirely in cut the high-water line is below the slope of the ground. The cut is entirely in virgin soil, in the soil in place.

Q. Does that have meanings from the standpoint of the security of the canal? [652]

A. It has.

Q. Would you describe the general practice in the engineering profession in this area in the treatment of a canal and the security measures taken

(Testimony of James Spofford.)

with reference to a canal that is cut in the manner you have described here?

A. Well, a canal that is in a cut, if there is no erosion there is nothing to be done.

Q. Is it a practice in this territory to install a core trench in a canal which is in cut, in this area?

A. No, I never heard of it being done on irrigation canals. You mean on the lower side?

Q. That is correct. A. No.

Q. What is the practice in the area with reference to lining the upper bank of a canal?

A. The upper bank of canals isn't usually lined.

Q. Would you explain why that is the practice?

A. My experience is that both banks of a canal are lined through some porous strata, like lava, sand, or material—this is concrete lining—where there will be drainage, proper drainage. My experience is that if concrete lining was placed against a solid bank you would build up a water pressure there that would be detrimental to you later. In fact, we do have one case on the North Canal where we have had that trouble and that—— [653]

Q. Would you describe that trouble?

A. Well, that trouble has been caused by freezing and thawing. The water has walled back there and it has been breaking up the concrete, and we have to repair, to caulk those joints every spring before we turn water in to the canal.

Q. What happens to the water in a canal of the character of the segment of the break when the water is taken from the canal?

(Testimony of James Spofford.)

A. Well, the tendency is to drain out towards the canal, into the canal.

Q. That is, the upper bank?

A. That is right.

Q. When were you notified of the first break in the North Canal?

A. I was notified by telephone about 12:30 on Sunday, July 14, 1946.

Q. What did you do when you were notified?

Mr. P. J. Gallagher: What time of day, a.m. or p.m.?

A. After.

Q. (By Mr. Veeder): The 12:30?

A. After noon.

Q. After noon? A. Yes.

Q. Would you state what you did when that notice was received?

A. When that notice was received I immediately drove to the scene of the break.

Q. And what did you do then? [654]

A. When I came to the scene of the break the watermaster in that district was with me and as we were approaching the place where the break had occurred we met the ditch rider, who was coming up the ditch, and we got there about the same time.

Q. Well, would you describe the situation as you saw it when you arrived there?

A. When we arrived at the break the gash through the bank was about thirty feet wide at that time, and the gauge on that day read a little

(Testimony of James Spofford.)

over 400 second-feet. That amount of water was passing through this break, down the slope, and covering some of the farm land below.

Q. Prior to leaving the office did you advise them to shut off the canal?

A. No. I looked at the break first—it is only eight miles—and at 1:30 the advice was given to shut the water off in the canal and to turn the Duniway pumps off.

Q. Then what did you do after that?

A. After that I notified Mr. Carter by phone in Boise of the occurrence of this break, and the instructions were given to proceed—instructions to the watermaster and ditch riders to proceed up the canal and open such gates as they could in order to take more water.

Q. What was the object of that action?

A. Well, this was a bad time of year, it was in the middle of summer, and the crops needed water. We were running on a five-eighths [655] delivery. The idea was that above if they could use more water during this period than the boys below we would give them a little more water to balance out during delivery.

Q. What action did you take about securing more men and machinery to effect repair?

A. Well, I knew by experience that it would take the water twenty-four hours or more to pass through this break, and I knew I could get the equipment there. I proceeded that same evening, that Sunday evening, I got in touch with the Clow-

(Testimony of James Spofford.)

ers boys and engaged their tractor, but, as I remember, the time was not definitely set when they should move until the next morning, Monday morning.

Q. What was the reason for that?

A. Beg your pardon?

Q. What was the reason for——

A. Well, their tractor at that time was at Mitchell Butte, they were levelling some little distance from the job, and they were not certain about getting a trailer. Our trailer wouldn't carry the load of the big machine. But they did secure that trailer.

Q. Did they arrive as soon as the canal was in condition so that the work could be undertaken?

A. They arrived on the job on Tuesday morning before the water had entirely receded.

Q. And what other action did you take in preparing for the [656] repair?

A. Well, Monday morning I also got in touch with Mr. Terhune and engaged his D-8 tractor; and we also reconditioned our dump trucks. In our Division we had three trucks, and I got one dump truck from the Succor Creek Division at Homedale, and also two from the Dead Ox Flat Division, which gave us a total of six trucks.

Q. What did you do concerning the securing of personnel to do the work?

A. The personnel were ordered on the job. This personnel included our own crew and several ditch riders.

(Testimony of James Spofford.)

Q. What did you observe, briefly, when the canal had drained out so that you could get into it?

A. Well, the gashes that the water cut so badly—they were scoured; it had washed clean.

Q. What was the character of the stratum that you observed in there?

A. I am no geologist, and the—the canal, I would say, was through this formation—some call it the Payette formation, or Idaho formation. It is strata of fresh water deposits of various natures.

Q. Were you there throughout the time that the repair was made, the first repair?

A. I wasn't there during all the time. There was about eighteen thousand acres affected below the break. In addition to that, [657] we had to deliver water to sixty thousand acres more land, and I didn't spend all my time on the job. Only a part of my time was spent there.

Q. When the material was cleaned out of the canal prior to the repair did you investigate the area that was cleaned out?

A. Yes. On Sunday night, Mr. Carter came over and we looked things over—of course, there was considerable water running at that time—and we decided on a general plan of rebuilding that gap that was washed out.

Q. What did the bulldozers and the machines reveal in cleaning out the canal preparatory to setting in the repair?

A. We knew by experience that we would have to use the 'dozers to excavate some kind of a trench,

(Testimony of James Spofford.)

cross trench, there, parallel to the axis of the canal, to expose firm material to make a tie for a new fill.

Q. Was firm material revealed by that excavation?
A. Yes.

Q. Were you there during the period when Mr. Gordon was making the repair?
A. I was.

Q. In your opinion as an engineer, do you think he exercised proper judgment in the character of repair that he made?
A. I do.

Q. Now, what were your instructions with reference to the flooding of water down into the canal?

Mr. P. J. Gallagher: That is objected to as incompetent, irrelevant and immaterial.

The Court: Overruled.

A. Will you repeat that question, please?

Q. (By Mr. Veeder): What were your instructions with reference to letting water into the canal after the repair had been completed?

A. On the morning of the 18th I was talking with Mr. Gordon about getting water down the canal and he stated that he would check this fill, and, in fact, he had an instrument and a rod there, and he and Mr. Kuhnly had checked the top of the fill, and he said he would like about twenty-five second-feet of water.

Q. And what did you do, under those circumstances?

A. And I gave instructions to the watermaster, Kuhnly, to proceed up the canal and lower some of the gates and——

(Testimony of James Spofford.)

Q. Could you explain which gates were lowered? I mean just generally, when you say lowered some of the gates, what does that mean?

A. Well, these gates are outlet gates from the canal to the laterals, and there are—the first gate that was drawing water at that time was at the North Canal 33.1 lateral and we had a sack dam at this point in order to run the water into the canal, and we had a 15-inch pipe there with the gate in order to let the water down. Well, in this trip in the morning [659] they thought they had turned down about the right amount, and in the afternoon the water hadn't reached the place, so the instructions were given for the men to go up the canal and turn down more water.

Q. When you say "turn down," does that mean that the head of water in the canal was increased?

A. No; they were turning down the lateral gates through which the farmers were irrigating at the time the break was being repaired.

Q. What was done with respect to the sand-bag dams that were in the——

A. The second time the men went up for more water they stated that they took several sacks out of this dam, and they proceeded up the canal and lowered two more gates, turning more water into the canal.

Q. Now, were you present when the first overtopping of the repair occurred? A. I was.

Q. And what did you do when you observed that situation?

(Testimony of James Spofford.)

A. When I observed that condition—do you want me to give all particulars?

Q. Well, what did you do, yes?

A. Well, my wife drove to the job with me that night and the car was parked in the orchard near Mr. Hust's, and when the water started to flow over this new bank—— [660]

Q. The repaired bank?

A. That is, the repaired bank—I attempted to walk across, and I had my oxfords on, and it was getting along toward dusk—well, I was stranded for a half an hour on the other side, and my wife saw my predicament, so I told her to go to the phone and call the watermaster, Bolitho, that the water was overtopping and to get his gang out and try and check all water back that was possible to check back by opening gates, canal gates.

Q. How long did the overtopping continue?

A. Well, I forget exactly. I must have stood there for possibly three-quarters of an hour before I got across without getting over my oxfords.

Q. Well, did you cross then?

A. I did cross. I crossed several times.

Q. Why were you able at that time to cross?

A. The bank was dry.

Q. Well, would you explain why the bank was dry?

A. The water had receded from the top of the fill.

Q. Was the recession of the water due to the

(Testimony of James Spofford.)

shutting off of the water in the canal, taking the action that you stated?

A. No; the water proceeded down the canal.

Q. It had nothing to do with the instructions that you gave, then?

A. That is right. The water proceeded down the canal. [661]

Q. Were you present at the time the second overtopping occurred? A. No, I was not.

Q. Where were you when you were notified of the second break in the canal?

A. That night, after the overtopping, I went home and went to bed, I thought we had the job licked, and the next morning, it was 4:30 in the morning—I was in my own office at 4:30 the next morning—and two of the men came in there and said that the canal had failed again.

Q. After the first overtopping how did you know that the water proceeded down the canal, that it didn't go some place else?

A. After my wife telephoned the watermaster and gave the—reported the overtopping, she came—she had to come back a few miles and come in below the break, at a point about almost a mile below the break, and proceed up the canal with the car to pick me up. She didn't know the water had subsided; she thought she had to do that. So I got in the car and proceeded back. Well, on the way back down the canal I saw the water flowing in the canal below the 36.7 gauge, which is more than half a mile down the canal from the break.

(Testimony of James Spofford.)

Q. In your opinion, was it good judgment on the part of Mr. Gordon to ask that water be released into the canal past the patch prior to the time that repair had been completed?

A. Yes, I do.

Q. Will you explain your reason for your conclusion? [662]

A. Well, at that time of year the crops of the farmers had to mature. The water was life to them and we did everything possible to get the water through that we could.

Q. What did you do when you were notified of the second break?

A. Well, I went up to the area at once, and Mr. Gordon was there, and we talked the matter of organization over and decided on the amount of equipment that we would need in the second repair, which we knew would be a lot greater than the first.

Q. Did you proceed to carry out your plan?

A. We did.

Q. Was that done immediately?

A. Well, no, because there was some water running yet that morning. There was probably four or five hundred miner's inches of water flowing at that time and we couldn't get in to work.

Q. When did the equipment arrive to start repair?

A. We started the equipment, two draglines, on the way to the job early the same morning, and in

(Testimony of James Spofford.)

addition to that we hired a second dragline from Mr. Leeburg to move his machine.

Q. In your opinion, was equipment there in time to immediately start the repair?

A. Well, as soon as practical. Now, Mr. Newell and Mr. Carter came over early that morning, and at that time of year it was hard to get dump trucks, and we, through their efforts mostly, [663] were able to get six large dump trucks out of Caldwell, with a sprinkler wagon, and in addition to that we got two dump trucks from Terteling, who was operating near Nyssa at the time, and we got two trucks from Black Canyon.

Q. When did you proceed to undertake the first repair? A. Just the second break, now?

Q. That is right.

A. Well, Mr. Gordon was on the job there, and it kept me busy trying to wrangle this equipment for the job, and the first thing to get in operation was a dragline. We had to haul a few loads of gravel on our access roads. The roads were chunky and we knew we had to have a little better roads. We got our bulldozer in to smooth the roads, to fill the holes, and before noon of the next day—

Q. Would you state, rather than “the next day,” the day on which it occurred?

A. The day after the second break. That would be the 19th. The gravel was being loaded and hauled in a stockpile near the job. At that time it was too wet in the bottom for the heavy equipment to work.

(Testimony of James Spofford.)

Q. Were you present while the material was being removed from the bottom of the canal preparatory to making the repair?

A. I was there part of the time.

Q. Did you observe the stratum in the bottom of the canal? A. Yes. [664]

Q. What did that disclose to you?

A. Well, the break was larger than it was before and it looked very similar, but naturally we were very much interested to know what had caused the second break, and we thought we found that material. In fact, there was a seam, as I remember it, on the north side of the break.

Q. The north end?

A. Well, it was the north side of the break, toward the canyon. In looking down through the break it would be on the left-hand side of the cut made by the water.

Q. What was the character of that seam in the stratum? A. Well, it seemed to be porous.

Q. And how far below the bottom of the canal was that?

A. Oh, I forget exactly. Seven or eight feet, maybe more.

Q. And what action was taken with respect to that stratum?

A. Well, we moved our big dragline in there, with the idea of cutting into that bank and trying to intersect any bad stratum that might be there, to make a good contact with this natural bank—with this bank on the north end of the break.

(Testimony of James Spofford.)

Q. Was all that removed, the whole segment of the porous stratum?

A. Well, I wasn't on the job all the time. The machine worked in there part of two days. We worked in a position so we could get by with our trucks, but the tractors were working in the bottom at this same time. [665]

Q. How much of the area, if you recall, was cleaned out in there?

A. They started to make this trench with the tractors, and after cleaning out the—well, the idea was to key in the new fill as much as possible and also to put in a cutoff.

Q. Have you an opinion as to what caused the breaks in the canal?

A. The foundation—there was a foundation blow, as near as I could tell.

Q. And would you clarify that statement?

A. Well, after the first break I felt that the cause of that break had been obliterated with the water, but after the second break we knew that there was some material there that was a contributing factor to the failure of the bank.

Q. From the standpoint of operation and maintenance, what precautionary measures should have been taken to ascertain that faulty stratum beneath the bottom of the canal?

A. I had no way of determining that it was there.

Q. Would you refer to Plaintiffs' Exhibit No. 74, and at the bottom of the lower bank of the canal

(Testimony of James Spofford.)

is what appears to be some loose material. Can you tell the Court the source of that material?

A. You mean this bank here (indicating)?

Q. The upper bank.

A. The upper bank? [666]

Q. That is right.

A. This picture was taken—when was this taken?

Q. In the spring of 1948.

A. Well, I would like to explain a little here——

The Court: No, never mind that now. Answer the question, if you can. If you can't say that you don't know anything about it.

A. That was material that was drifted from the upper bank with the Government bulldozer.

Q. (By Mr. Veeder): Would you describe that operation of drifting in the material?

A. Well, at the time of the repair of the first break we knew that that was—we found that that was the most available material that we had, fine material, for blanketing the bottom of the canal, so we sent the Government D-7 tractor up there and they stripped the brush and they worked for some time drifting that fine—sort of a fine, sandy silt into the canal.

Q. What was the object of that?

A. The object at that time was to use that material for filling the canal, to bring the canal up to grade, across the area of the new fill, where the new fill was.

Q. How extensive was that operation?

(Testimony of James Spofford.)

A. Well, they worked, as I remember, two days at that time, and later we worked for three weeks on that same bank.

Q. Subsequent to the break? [667]

A. After the break.

Q. The second break. How far did you go?

A. Well, the 'dozer—of course, we didn't work continuously on the north bank, because there were materials on the points that were not suitable for silting purposes. We worked all the way up to Sheep Creek lateral, which was——

Q. How far is that? A. Six miles.

Mr. Veeder: That will be all.

The Court: Recess until a quarter to two.

(Whereupon, at 12:45 o'clock p.m., Wednesday, June 16, 1948, a recess was had until 1:45 o'clock p.m.)

Afternoon Session, 1:45 P.M.

JAMES SPOFFORD

thereupon resumed the stand as a witness in behalf of the defendant herein and was examined and testified as follows:

Cross-Examination

By Mr. Lytle:

Q. Mr. Spofford, as manager in charge of the Owyhee Project, you have, among other duties, the

(Testimony of James Spofford.)

supervision of the distribution of water to the farmers and the regulations of the headgates?

A. I have. [668]

Q. Now, you stated that in 1944 your attention was called to the seepage of water in the Hust place. That was brought to your attention by whom?

A. By the watermaster, Bert Adams. He was acting manager at that time.

Q. Did I understand in your examination of the canal after viewing that water on the Hust place you examined the canal about five hundred feet upstream from a point opposite this water and four or five hundred feet downstream?

A. No, it about four hundred feet upstream and, oh, seven or eight hundred feet downstream, as I remember.

Q. You made that examination by going along afoot in the canal?

A. That is right.

Q. At that time did you also examine the Shaw place?

A. No. No, I did not.

Q. Did you ever go down onto the Shaw place and go over any part of that afoot looking for seepage?

A. No, I did not.

Q. Was there ever any report made you of seepage in the coulee just north of the field shown in Exhibit 82?

A. The water in the coulee in the Shaw place north of where the break occurred, oh, possibly four hundred feet, of course that has run for a

(Testimony of James Spofford.)

long time. That is where all that vegetation is there.

Q. When were you first informed of that? [669]

A. Well, that is very noticeable from the canal bank.

Q. Will you please answer my question? When were you first informed of that leak?

A. That seep was called to my attention in the summer of '44.

Q. That has continued since that time?

A. Yes.

Q. Now, is it not a fact that that seep runs throughout at least a period of the year in the spring and fall when there's no water in the canal?

A. Possibly it does.

Q. Have you ever been along there in the spring to look for it?

A. No, not that place in particular.

Q. Have you ever made an examination there to determine the period of time when that seep runs?

A. Well, that seep hasn't worried us——

Q. I am not asking you if it worried you. I am asking you if you have ever made any investigation to determine——

A. No, there has been no complaint in regard to that seep.

Q. Again I ask you if you have ever made any investigation to determine what seasons in the year that seep is running? A. I have not.

Q. When you went down the canal investigating

(Testimony of James Spofford.)

the canal to find the source of the leak on the Hust place did you go as far north as to cover the section of the canal included in the [670] break of 1946?

A. Yes, I would say I did.

Q. And at that time you knew of the leak or seepage in the coulee about four hundred feet north of the field shown in Exhibit 82?

A. That is right.

Q. As you examined the canal you found no evidences of leakage in the bottom of the canal?

A. I did not.

Q. You found no evidences of leakage in the outer bank of the canal?

A. This one leak that was there, yes.

Q. I mean in the canal itself?

A. No, nothing in the canal itself.

Q. Yet those leaks existed at that time? That is, there was water coming out of the toe of the outer bank at that time?

A. It showed in that ravine close to the toe.

Q. Yes. Then what investigation did you make, if any, to determine if that water was coming from any other source along the canal?

A. I made no further investigation.

Q. You made no investigation into the mountain side bank of the canal?

A. I did not.

Q. Now, as a matter of fact, about all the view or investigation [671] you made of the Shaw place to determine whether any of that ground was seeped was as you rode along the top of the ditch bank in a car and observed it as you passed?

(Testimony of James Spofford.)

A. That is right.

Q. I believe you stated you went along there in the spring of 1946? A. I did.

Q. And on that occasion, when you say you observed no evidence of seepage in the Shaw field, that was the time when you rode along the ditch bank in a car? A. That is right.

Q. You stated that it is unusual to line the upper or mountain side of the canal.

A. That is right.

Q. That would depend largely upon the nature and character of the strata exposed?

A. The only lining that I know of is where it is sandy ground, gravelly ground.

Q. Well, then would it not be determined—the advisability of lining the mountain side bank of the canal would be determined by the character of the soil that was exposed? A. That is right.

Q. And you do have sections of the canal, both upstream and downstream from the point of the break, where the mountain side bank of the canal is lined? [672] A. We have some sections.

Q. Both above and below?

A. That is right.

Q. At the time of the first break your gauge readings showed what rate of flow in the canal at the point of the break?

A. The closest gauging station is at 36.7, which is less than half a mile downstream from the break,

(Testimony of James Spofford.)

and the morning of the break that registered 417 second-feet.

Q. Four hundred seventeen. How many turn-outs are there between that gauging station and the place of the break?

A. There is one small turnout.

Q. Whose ground does that serve?

A. That serves Mr. Shaw's ranch.

Q. When water is turned out of that headgate what amount is received?

A. Well, a maximum of about a second-foot.

Q. Do you know if that headgate was receiving a second-foot or any amount of water at the time of the break?

A. No, I don't know.

Q. What?

A. I don't know.

Q. You don't know. Well, in any event, there would be 416 second-feet in the canal at the section of the break at the time of the break?

A. That is right. [673]

Q. Upon being informed of the break, who gave instructions to go up the canal and shut down the water?

A. I gave the instructions.

Q. To whom?

A. To the watermaster.

Q. Well, who is he?

A. Mr. Bolitho, William Bolitho.

Q. Bleichhold?

A. (Spelling) B-o-l-i-t-h-o.

Q. Oh, Bolitho. And you instructed him to go to a certain point?

A. I advised him to go up the canal above the

(Testimony of James Spofford.)

break and open up and adjust the lateral gauges so that they would take more water out of the canal for the water users served from the canal above the break.

Q. Any steps taken to turn the water out of the canal at any other works?

A. Not except at the head of the dam. The Superintendent of the Owyhee Dam was immediately notified to turn out 500 second-feet of water, cut back that much water.

Q. You mean cut back 500 second-feet?

A. That is right.

Q. And where would that be cut back?

A. At the Owyhee Dam.

Q. How many miles above this break? [674]

A. About thirty-six miles.

Q. How long would it take the cutting back of 500 second-feet at the dam before it would be reflected in the flow at the break?

A. At least twenty-four hours, between twenty-four and thirty hours.

Q. And that was the only means taken to reduce the amount of water in the canal, except what was turned out at these gates?

A. It is possible that we might have taken out 75 second-feet at the intervening gates. There are some thirty-odd gates above the break.

Q. The intervening gates? A. Yes.

Q. Now, intervening between what points?

A. Well, intervening between 15.6 and the break, or fifteen miles up the canal, about fifteen miles.

(Testimony of James Spofford.)

Q. How long would it take before the difference in the head would be reflected between the upper gates and the point of the break?

A. Well, the way the gates are regulated, there would be a gradual reduction only in that amount.

Q. Yes, but approximately how long would it take to——

A. Well, I imagine it would take, oh, ten or twelve hours before all that reduction would be noticeable at the break.

Q. Now, as I understand, the cut following the first break, [675] the bottom of the cut, was considerably lower than the normal line of the bottom of the canal?

A. That is right.

Q. About how many feet?

A. I would think nine or ten feet,—that is, the very outer lower slope of the cut.

Q. Yes, the breakover——

A. That is right, towards Mr. Shaw's ditch, down in there.

Q. Yes; and that showed a series of strata of sand and gravel and sandstone?

A. That is right.

Q. Those strata were disclosed from almost immediately below the bottom of the normal bottom of the canal right down to the bottom of the cut?

A. That is right.

Q. You say Mr. Carter came over that evening and you and he discussed the general plan for the repair?

A. That is right.

(Testimony of James Spofford.)

Q. And the repair was made on the basis of that plan as you and he discussed it?

A. That is right.

Q. Now, what exploration, if any, did you make at that time to determine the cause of this break?

A. We were unable to make any determination, on account of the water. Practically the full head of water was still running [676] then.

Q. Well, then, you made no exploration at that time? A. That is right.

Q. And you adopted your plan of repair——

A. That was to put in a core.

Q. ——when the water was in the canal and running down through the cut to the extent that you could not make any exploration?

A. That is right.

Q. After the water ceased running out of the cut what exploration did you make to determine the cause of the break?

A. I made no particular investigation. We had the equipment on the job, and the equipment we knew would open up the material. The idea was to go down to a firm foundation with a trench, which we attempted to do.

Q. What exploration did you make either above or below the cut caused by the break to determine whether or not the structure above or below had been weakened? A. I made no investigation.

Q. You made no investigation. Now, on the morning of the 18th, just what was the extent of the repair made at the time Mr. Gordon directed

(Testimony of James Spofford.)

that a head of water be brought down the canal?

A. Mr. Gordon had a level rod and he had taken elevations of the top of the new fill in the break, and he told me that [677] the fill was of sufficient height so that it would be safe for us to turn down 25 second-feet of water.

Q. Do you know what the elevation of the fill was with relation to the elevation of the normal water level in the canal?

A. I couldn't say exactly.

Q. Approximately?

A. It was about the normal water level.

Q. Yes, it was about that.

A. Yes, that is right.

Q. You then instructed someone to go up the canal and open some gates? A. I did.

Q. How many gates were opened?

A. The gates—the first gate opened was at 33.1 lateral,——

Q. Yes.

A. ——and possibly two others up above that. Three gates—there were three gates that were turned down with the idea of getting sufficient water to come through.

Q. Those three gates had been opened to almost maximum capacity in order to reduce the flow in the canal, is that right?

A. Those gates—the record of the delivery through those gates is official record in my office.

Q. Yes. Well, do you know what was being turned down at those [678] gates?

(Testimony of James Spofford.)

A. At that particular time the head of water had been lowered to the extent that there was not over 12 feet, 10 or 12 feet, of water.

Q. What was the nature of the structures, if any, in the canal at that time above the break?

A. The first dam was at 33.1 lateral, and then there were two smaller dams above this lateral. There were three small dams in the canal, that is, sack dams.

Q. Was there a cofferdam or a plug above the point of the break? A. Yes.

Q. And what was the condition of that at the time water was ordered down?

A. At the time there was very little water in this cofferdam.

Q. You mean above the cofferdam?

A. Above the cofferdam, yes.

Q. All right. Now, how high was the cofferdam built?

A. I couldn't answer that exactly. I think——

Q. Would you say the cofferdam was built up to the height of the normal water level in the canal?

A. Yes, I would think it was that high or maybe a little——

Q. Or higher.

A. Maybe a little higher.

Q. And back of that, or above the cofferdam, what would you say [679] was the depth of the water?

A. The depth of the water above that dam—you mean the highwater depth?

Q. No, as it stood at that time, at the time the

(Testimony of James Spofford.)

men were ordered up to turn down some water?

A. I couldn't tell exactly. It wasn't full. I wouldn't imagine that it was over four feet there at that time.

Q. And the normal water level would be what, how many feet?

A. Well, about—it would be over six feet.

Q. And all the water that was turned down at that time amounted to about 12 second-feet?

A. Yes.

Q. Did you observe what, if anything, happened to the cofferdam just before the first overtopping?

A. Yes, I was there at the time.

Q. What happened?

A. Mr. Gordon opened that cofferdam with a shovel and let the dam disintegrate.

Q. And that was about four feet—the water was about four feet in height back of it?

A. No, at that time more water had come in. When we sent up for the water was 9:00 o'clock in the morning, and this was, oh, about maybe 7:45 or 8:00 o'clock at night when Mr. Gordon broke the dam.

Q. And at that time there would have been added a flow over a [680] period of time of 12 second-feet?

A. Well, that water had been increased. At the time the dam was broken I believe that the water was probably up to a depth of between five and six feet.

(Testimony of James Spofford.)

Q. To a depth of approximately a foot below the natural water level in the canal?

A. I would say about, about that.

Q. Yes; and also about a foot below the crest of the new fill? A. That is right.

Q. Then as the water came through the cofferdam I presume it flowed on down the canal?

A. No, as the water came through there it just disintegrated quite fast——

Q. What do you mean? As the——

A. Well, it came through with a surge, more or less of a surge, and the water sort of piled up, as you might say, and raised up a little over the height of the fill.

Q. Was that over the entire fill, or only the northern end?

A. Well, I would imagine it—I believe that the water passed over a crest of possibly thirty feet of that new fill.

Q. At the time the water came through at the occasion of this first overlapping how much below the natural level of the bottom of the canal, the normal level, was the bottom of the canal then?

A. The bottom of the canal had been somewhat filled and [681] possibly it had not been brought up to grade, I know that, entirely, but exactly what the condition was——

Q. Quite considerably below grade?

A. Well, I couldn't determine that exactly. Probably it might have been a couple of feet below

(Testimony of James Spofford.)

grade,—more or less. Now, I couldn't state at this time.

Q. Now, after this first overtopping what was done to stop the flow of the water coming down the canal?

A. Well, I stood there at the time the water overflowed on this new patch, overtopped it, and the water receded before I left and the water passed down the canal. I went back down the canal and went home.

Q. Do you know if the cofferdam was rebuilt?

A. Yes, the testimony——

Q. What efforts were being made to stop the overflow of the new fill before you left?

A. They were replacing the cofferdam, putting in another cofferdam, at that time.

Q. And had that been replaced before you left?

A. No.

Q. They were in the process?

A. That is right.

Q. Now, do you know what caused the head of water which later disintegrated that cofferdam?

Mr. Veeder: I object, your Honor. The witness said he was [682] not there at the second overtopping, and there is no testimony from the witness at all on the subject.

Mr. Lytle: I think the question calls for a Yes or No answer, your Honor.

The Court: Well, he may answer. If he doesn't know, he can say so.

A. I would like the question again.

(Testimony of James Spofford.)

The Court: Read the question.

(Pending question read.)

Mr. Veeder: That was the second cofferdam, is that it?

Mr. Lytle: Yes.

A. No.

Q. Had you at that time or later that night ordered any more gates closed or any other means carried out to bring additional water down the canal?

A. Yes, the order was given, as I remember it, about 3:00 o'clock that afternoon.

Q. To whom.

A. It was given to one of the watermasters.

Q. What watermaster? A. Mr. Kuhnly.

Q. What was he directed to do?

A. He was directed to go up the canal and turn down more water. There had not been sufficient water that came down the canal. The canal was tried out and there was not sufficient water [683] there.

Q. And what would he do to accomplish that purpose?

A. Well, he would continue up the canal and turn down more gates, with the idea of getting an additional 25 second-feet of water to that that was in the first order.

Q. Had there been any means taken, other than the opening of the gates to laterals, to retard the flow in the canal? A. Yes.

(Testimony of James Spofford.)

Q. What were they?

A. They were some checks at Sheep Creek Siphon and radial gate at Lockett Gulch.

Q. Well, now, what had been done at Sheep Creek Siphon to retard the flow down the canal, or diminish the flow down the canal?

A. There had been some checks put in the canal.

Q. Describe what you mean by checks, how that was accomplished.

A. The check-boards in that structure, in that bulkhead at the intake of Sheep Creek Siphon, are 4x6s, about 9 feet long, and there had been some checks put in that structure.

Q. Do you know how many? A. No.

Q. Who put them in?

A. They were put in by the watermasters and ditch riders under instructions from me.

Q. Yes. Then who, if anyone, went up the stream? Was it [684] Kuhnly?—or went up the canal, or stream?

A. Mr. Percy, with Mr. Pettet, went up the stream.

Q. What had been done at Lockett Gulch to diminish the flow?

A. The radial gates at Lockett Gulch were closed down.

Q. Is there a waste-way at that point?

A. There is a waste-way, constructed at that point.

Q. Was the waste-way gate open?

A. No, it was not in operation.

(Testimony of James Spofford.)

Q. Pardon? A. The gate was closed.

Q. And so there would be no wasting at that point? A. That is right.

Q. What instruction did your watermasters have as to what they should do at Lockett Gulch?

A. The instructions at that time were for them to turn down an additional 25 second-feet.

Q. You would not know, of course, of your own knowledge, just what they did do? A. No.

Q. Did you make inquiry later to determine how many of the splash boards they had taken out of Sheep'shead? A. Sheep Creek?

Q. Yes. A. Yes.

Q. How many? [685] A. Two.

Q. Before they got to Lockett Gulch—or, rather, to Sheep Creek Siphon and to Lockett Gulch, how many gates would they have closed?

A. I believe, counting the small—there are three main laterals there, and the other was a small gate—the total, I believe, was eleven.

Q. And how much water would be held back in the canals by closing the three laterals?

A. I don't understand that question exactly.

Q. Those three lateral gates were open, were they not? A. Yes.

Q. When you closed those three gates how much water would be retained back into the canal?

A. Oh, probably—at that time I believe the record shows it to be in the neighborhood of 18 feet, something like 18 second-feet.

Q. Eighteen second-feet? A. Yes.

(Testimony of James Spofford.)

Q. And how much water would be retained in the canal by closing the other eleven headgates?

A. Well, those are three of the eleven. There are eight others.

Q. I mean the other eight, Mr. Spofford.

A. Well, those are smaller diversions,——

Q. Yes. [686]

A. ——as low as a second-foot. I don't think that they could have developed over 25 second-feet in all the gates.

Q. In all three? A. In all eleven.

Q. Yes. That would be plus the additional water that came down by removing the splash boards at the Sheep Creek Siphon and by opening the Lockett Gulch radial gate?

A. The stream in the canal had lowered a lot when they went up. It was nearly completed. In other words, that 25 second-feet they put in in the morning had dribbled out to just a few second-feet. I would imagine that it could not any more than have double that amount by the time it got back to— Sheep Creek Siphon is located about six miles above the break and Lockett Gulch about two miles farther up, and naturally the water would level down, and in my estimation I wouldn't think that there was over 50 second-feet that was approaching the break, from the records, my calculations on the records of delivery.

Q. Now, you had 1100 second-feet at the head of the canal? A. Not at this time.

Q. Had there been a further cut at the dam?

(Testimony of James Spöfford.)

A. The capacity of the canal at the head is 1100 second-feet, but there was 500 second-feet that had been ordered off, so there was about—there was less than 600 second-feet at the head of the canal. [687]

Q. What was the capacity at Lockett Gulch?

A. The capacity of Lockett Gulch is rated at, I believe it is 560 second-feet.

Q. And approximately the capacity head was coming down from Lockett Gulch?

A. No, that was when we were turning in 1100 second-feet. That is the capacity of Lockett Gulch Siphon, the rated capacity.

Q. Let me get this clear: Each of those smaller gates had a capacity of approximately a second-foot? A. Yes.

Q. And the three laterals had a capacity of 18 second-feet?

A. They were running about that, yes.

Q. All of the water that went past Lockett Gulch was turned down and would come down to this break?

A. With the exception of one turnout, and that was the first turnout below Lockett, and from the report that I got that gate was not closed.

Q. Was not closed. Now, you state that in your judgment Mr. Gordon used good judgment when he ordered a head of water sent down; am I correct? A. That is right.

Q. You predicate that more upon the desirability of getting water through the canal for service

(Testimony of James Spofford.)

to the farmer below than upon 'most any other consideration, do you not? [688]

A. Well, we wanted to operate safely. At the same time, we knew that this ground was burning up for the lack of water.

Q. There was a high demand for water at that time?
A. That is right.

Q. And your chief purpose as manager was to get this water through just as fast as you could?

A. And safely.

Q. Was it upon your request and your bringing up the subject to engineer Gordon that he stated that it might be advisable to let down 25 inches?

A. Twenty-five second-feet?

Q. Or 25 second-feet?

A. I didn't get that question.

Q. Was it at your request or his that that——

A. Oh, at my request.

Q. Yes. And he acquiesced in that request?

A. That is right.

Q. Now, in the course of your operations as manager I presume you had, from time to time, examined and looked at the banks of that canal along in this area?
A. That is right.

Q. At the section of the bank where the break was involved, had that been lined prior to the break?

A. No. The only lining was riprapping above—on the curve above the Hust seep and below, probably,—oh, seven or eight [689] hundred feet below the break.

(Testimony of James Spofford.)

Q. And there had been no lining at the point of the break? A. No particular lining there.

Mr. Lytle: That is all.

Redirect Examination

By Mr. Veeder:

Q. In your opinion, Mr. Spofford, did the overtopping of the water prior to the second break have any relationship to the break?

A. Not to my knowledge.

Q. In your opinion, did it have any casual relation with the second break? A. No.

Q. What was the effect—you were standing there—what was the effect of the overtopping on the repair?

A. The overtopping probably cut, oh, possibly three inches of loose dirt over the top of the new fill, cut it off and washed it away.

Q. Are there water users between Lockett Gulch and the outlet of the Owyhee Dam? A. Yes.

Q. Were they receiving water at that time?

A. There was 40,000 acres receiving water from the main canal above the break. [690]

Q. How much do you believe that diminished the 500 second-feet that were available at the dam?

A. During the time of the break—and we probably were overcautious; at times maybe we didn't get enough water through—but we did not serve all the people above the break and, in fact, there was some damage claimed because they didn't get

(Testimony of James Spofford.)

the water, but we didn't want to get the water down on that new fill when they were in operation.

Q. How far is the coulee north of the Ben Shaw place from the place of the break?

A. Three or four hundred feet.

Q. Would you step to Plaintiff's Exhibit 82 and locate again the farmer's ditch? I think it is Exhibit 82, there at the bottom. Is it located properly as drawn on there by the witnesses of the plaintiffs?

A. Well, it isn't entirely to scale.

Q. Well, I mean approximately?

A. It is approximately.

Q. Would you say that that ditch on there, Ben Shaw's ditch,——

Mr. Lytle: I object to this as not proper redirect. We did not go into any of this matter on cross-examination.

The Court: Objection sustained.

Mr. Veeder: We would like to have the privilege of asking that question on direct, if your Honor please.

The Court: Oh, this is all cumulative. That is denied. [691] It has been covered three or four times by other witnesses.

Mr. Veeder: We have nothing more, your Honor.

Mr. Lytle: If your Honor please, I would like to ask the indulgence of the Court for the privilege of asking this one question that probably should have been asked on cross.

The Court: What is the question?

(Testimony of James Spofford.)

Recross-Examination

By Mr. Lytle:

Q. How long a period of time was the water off?

A. The water was off entirely from about noon Sunday the 14th until the 23rd, and we got some water past the break that morning, about 40 second-feet as I remember, and we gradually built that water up in the canal and we reached the full head about the 30th of the month, as I remember.

Q. Now, the 40 second-feet that went past the break down the canal, was that served to the farmers in line on the canal, or was that carried clear through to the north end of the canal?

A. That is right, it was left in the canal.

Q. How many miles, approximately?

A. About thirty-five miles.

Q. And how soon after you had the first break repaired was it before you ordered the full head in at the head of the canal?

A. Well, we kept stepping the water up and it took until about the 29th before we had a full head of 1100 second-feet at the [692] head of the canal.

Q. But after the repair of the break you stepped it up from time to time?

A. No, this was the second break. I misunderstood you,—the second break.

Q. I am asking you about the first break.

A. No, we put an order in for 100 second-feet of water, and that order only lasted about six hours;

(Testimony of James Spofford.)

we ordered it off, and the water never got through on that order.

Mr. Lytle: That is all.

(Witness excused.)

Mr. Hess: Call Mr. Clowers. [693]

WILEY A. CLOWERS

was thereupon produced as a witness in behalf of the defendant herein and was examined and testified as follows:

The Clerk: Your full name?

A. Wiley A. Clowers.

(The Witness was thereupon duly sworn.)

Direct Examination

By Mr. Hess:

Q. Where do you live, Mr. Clowers?

A. At Madras, Oregon.

Q. And what is the nature of your business, Mr. Clowers?

A. It is a dual business: farming, individually; and, in partnership with my brothers, land leveling and earth moving, earth work construction.

Q. And what is your age?

A. In the Madras area at present.

Q. Your age, please? Your age?

A. Thirty-five years old.

Q. With whom are you associated in the construction or earth-moving business?

(Testimony of Wiley A. Clowers.)

A. With my brothers, Allen and Philip Clowers.

Q. Were you here in the Ontario country during the time of the break of the North Canal of the Owyhee Project in the year 1946?

A. Yes; I lived at Nyssa and worked in the Nyssa vicinity. [694]

Q. Were arrangements made with the Project officials for you to do work upon that break?

A. Yes, there were.

Q. And when were the arrangements completed, and with whom?

A. The arrangements were completed on Tuesday, during the day,—I disremember the exact hour,—but with Mr. Spofford. I believe it was before noon, however. We were asked to stand by the evening before in the event that we were needed, so that it would not be a complete surprise.

Q. So if what?

A. So that if we were needed it would not be a complete surprise.

Q. Oh, I see. That was on Monday?

A. No; the first standby was on Sunday.

Q. Oh, the first standby was on Sunday?

A. That is right.

Q. Arrangements were made with you on Sunday, the 14th?

A. No, no arrangements were made. It happened that we were talking with Mr. Spofford and he said for us to stand by with any equipment in the area.

Q. That was on Sunday, the 14th?

(Testimony of Wiley A. Clowers.)

A. That is right.

Q. And what equipment did you have in this area?

A. A D-8 Caterpillar and 'dozer.

Q. And when did you take that equipment on the work?

A. I believe it reached the work early on Tuesday morning [695] following the break.

Q. What condition was the floor bed of the canal in then?

A. It was as the water had eroded it, eroded some—well, since I didn't measure it, some two or three hundred feet upstream and above a hundred feet or so, between a hundred and two hundred feet, downstream.

Q. When did the Terhune Caterpillar get there in connection with the time yours got there?

A. That I don't remember, sir.

Q. Was it there before or after?

A. Even that I couldn't say. I helped deliver our Caterpillar there, but didn't do the first shift on the cat.

Q. Was the cat running more than one shift?

A. Yes, the cat was running the three shifts in the day when there was any work for the Caterpillars to be doing it.

Q. And who operated it?

A. I operated one-third of the shifts.

Q. And who operated the other shifts?

A. My brothers. We operated six hours on and the other eighteen hours off.

(Testimony of Wiley A. Clowers.)

Q. What equipment was there there at the time you first began?

A. At the time that I began, the two Caterpillars and other equipment.

Q. Were there any trucks there at that time?

A. Not at the first break. The first few shifts we had to [696] clean out the break and the floor before any trucks could get into the area.

Q. Did the Project have a Caterpillar there, too?

A. Yes, that I knew. However, at the immediate time we saw it to and from our way to work it was doing all preparations necessary to receive trucks and equipment on the job.

Q. From what appeared to you, could you have gotten into the canal and worked in the canal with your Caterpillar prior to the time you did?

A. No; it was as early as was possible.

Q. And tell the Court what you did there with the Caterpillar and of what the operation consisted, just how it was carried on. Just tell the Court in your own language.

A. We were given our general instructions prior to beginning our shift on the Caterpillar by Mr. Gordon, while the other operator was still working, the reason for that being that it would save time in the Caterpillar's operation, which was of importance, since only two machines could work in the area, being confined as it was, and every hour it could work, of course, speeded up completion. So after those general instructions were given we proceeded with the part of them that might succeed whatever part was to be done, and which mostly con-

(Testimony of Wiley A. Clowers.)

sisted of sloping down the two banks, cleaning the inside portions of each lower bank, cleaning the floor of the canal and the area of the break, the floor down through the [697] break, scraping down such materials as was possible to scrape off of the upper, and only the upper, bank, the construction of such roadways as were necessary down the side of the bank, which were not in existence, and the stockpiling of material from the inside. I believe that covers just about the total of the early part of the operation. Those were the different steps.

Q. What did you note in regard to the condition of the banks, the insides of the banks, of the downstream bank?

A. Well, in our instructions, after the banks were sloped down and we were taking the dirt from the inside of the canal, on the inside of the lower bank both above and below the break, we were instructed to cut the dirt out and into the bank until firm, hard material were reached, and if at any time we reached any other than the ordinary wet material found inside the ditch at any point we were to report it and, if not, simply to clean out and straighten out the bank, as it was left pretty—the lower bank was left pretty well eroded by the stream of water that flowed out after the break. But, at any rate, those were our instructions, to clean out any loose material or any wet material until we were sure that we were in safe, hard material and at that time call it to Mr. Gordon's attention. He passed inspection on each one of them before we finished.

(Testimony of Wiley A. Clowers.)

Q. State whether or not you would cut down—how you cut down on the floor of the bank and leveled it off to strata that [698] had been washed down through the bank and exposed by the erosion.

A. We went back upstream as far as the erosion had taken place and with the 'dozer cut off all loose material or material that we could cut off. We couldn't cut very deeply, because we could only just get the edges of each step in the stratum, because the stratum was rather thin stratum, or rather, six inches to a foot at the most, and stepped as the water had eroded it, and we took that excessive dirt out, out through the opening of the break, into the stockpile. Then near the area of the break we took out all material that we could cut with the 'dozer blades, the remainder being so hard and firm that we could not move it.

Q. And then after that repair was made I will ask you as a dirt mover if this all appeared sound after all of the wet material or any of the loose material in the bottom was completely cleared and to both ends, as far as it could possibly be reached, on the lower, downstream side of the break and on the upper side of the break?

A. Yes, it did, in as much as we had used both slopes of the bank to back up for the material and mixing and blending the material in the fill. We didn't slope the banks down any more gradual slopes than was necessary to back the Caterpillars back up the slope, hence they were rather steep and we were able to back up without trouble in high reverse.

(Testimony of Wiley A. Clowers.)

Q. And then how did you build the bank,—that is, to fill the [699] break?

A. As I remember, the first material that put in the fill was put in the core trench by dragline, pick and shovels, and, of course, we compacted that and helped to blend it, which was gravel and dirt and the mixture that came in from part of the spoil of the old bank, that was taken to the spoil pile, and then, as I remember, one of the Caterpillars during the operation at all times was bringing in spoil material which was blended to some extent and added to gravel pit-run that was dumped on the top of the north bank, that being brought on down with the Caterpillar and mixed with the spoil material and compacted by both cats by running repeatedly back and forth across them as the fill was being made.

Q. Were you there when the first water was turned down, or the first—were you there when the first overflowing of water over the bank took place, when the cofferdam was removed or opened?

A. No, I was not.

Q. Did you observe that when you came on your shift, after it had been over it?

A. Yes, when I was called back out, as I remember, about 11:00 o'clock, between 11:00 and 11:30, since the water had overtopped we were afraid to cross the draw north of the Shaw place, so I brought my truck in from the north way across the canal bank—it is about, as I remember, three-quarters of a [700] mile or a mile down the road to the north of

(Testimony of Wiley A. Clowers.)

the bank, hence in parking my truck I parked it on the north side of the eroded draw, or the place where the break happened, and ran on down the hill, and, in walking up, instead of going down the roadway I just cut across to my cat, which was parked on the south side of the patch, and in so doing I crossed over the face of the patch on foot, with a flashlight; so I did cross it and observe its condition.

Q. And was there any part of the blended material in that bank that had been washed away,—that is, the blended portion of the material over the top of the bank?

A. It showed the evidence that water had run across it, but no perceptible amount of material had been washed down; it did not disintegrate the bank at all.

Q. Then what did you do after that? Did you keep building up the bank, or what was done?

A. No, my purpose in being called back was to be on hand if any eventuality should arise. I started the Caterpillar, and Mr. Gordon then told me that he was expecting water to come on down enough to overtop the little cofferdam which was placed in earlier in the evening, and that I was to be on hand so that when that overtopping came if any action of the Caterpillar were necessary that I would be there to do so.

Q. Well, were you there?

A. Yes; I had the cat started and running, with its lights on, [701] parked just above the cofferdam.

Q. And that was about what time?

(Testimony of Wiley A. Clowers.)

A. Well, in accurate minutes I couldn't remember. It was somewhere between the hours of 11:30 and 12:30, I would estimate, perhaps not even quite so late. There was no particular need at the time of knowing the hour, and I never was able to ascertain in my own mind just exactly what moment it did happen.

Q. All right, then what did you observe there, if there was a second overtopping that you saw,—what did you observe?

A. Well, I stayed at the cofferdam until it washed out part way, and then got on the Caterpillar and drove down across the patch, or on the patch, to nearly its center, and sat there and just waited and watched the water build up in the canal, and when it started to overtop Mr. Gordon waved to me to bring dirt, since it was only overtopping a small area, and I backed off the new patch and picked up some of the old bank that was there on top and brought it across to start building up more free-board above the water line, which I did until I had it stopped, and as I completed my last load of dirt I backed up just enough to see—the lights are set on a Caterpillar so that you can't observe directly under your tracks very well, you have a not too clear picture of what is under there if you are doing dirt work ahead, and I was forced to back up some twenty feet to be able to get my lights on the area I had just delivered my dirt to. [702]

Q. Well, what did you observe there on top of the bank or otherwise?

(Testimony of Wiley A. Clowers.)

A. Well, there was nothing to observe except water on one side and darkness on the other.

Q. How deep was that water?

A. To the best of my knowledge, it was approximately a foot and a half to two feet, perhaps more than that, blow the top of the bank by that time, because it was beginning to recede. At any rate, I sat there awaiting further direction from Mr. Gordon.

Q. Well, did the overtopping do any noticeable damage to the bank at all?

A. Well, it couldn't do any damage, because the bank comes at the area of the first erosion, or top, and I was able to drive the Caterpillar on across the top of the bank without having to worry about the width, and the Caterpillar is a little over eight feet wide, the tracks, and, as I remember, it still retained its original width, or nearly so.

Q. And then did you observe something later, after the water had subsided?

A. Yes, the thing I remember mostly was observing frantic efforts on Mr. Gordon's part to attract my attention, because I was not observing much of anything because the water seemed to be going properly and I was just awaiting orders to go home, because I thought there was nothing to do. He [703] started to waving frantically and I got off the Caterpillar and went up to see what he wanted, because I could tell by his repeated flashings of light out to the side of me somewhat and out in the ditch, so I went up to see what he wanted me to see, and I then

(Testimony of Wiley A. Clowers.)

went back to my Caterpillar as fast as I could. There appeared to be something like a whirlpool, or it looked like the inside of a horn as you would look at it, the righthand side——

Q. Where was that?

A. Well, it would be an estimate,—it seemed to me just to be near the center of the canal and perhaps six feet or so from the bank and just ahead of where my cat was setting perhaps fifteen or twenty feet. The whirlpool was at the water's surface.

Q. Now, how much time was that between the time you had repaired the top of the bank from the second overtopping until your attention was called to that?

A. I couldn't say. Perhaps it wasn't very long. It couldn't have been any more than five minutes to ten at the most, for if it had been any longer than that I would have gotten off the cat to go ask for instructions.

Q. And how long had you been working on the cat prior to that, repairing up above on account of this overtopping?

A. Oh, I don't believe I worked in making the repair more than fifteen minutes at the most. Most of my time was spent at the [704] cofferdam, just waiting for it to go out.

Q. All right, then what happened after you got the cat out?

A. Just before I started to taking it out I, of course, was wondering what caused the vortex or

(Testimony of Wiley A. Clowers.)

whirlpool, and in the lights, on the right-hand side down toward the lower part of the bank, I could see where the water was coming out, and of course that scared me so much that I thought the best thing to do was to get the cat out as fast as I could and so I took it back past center, back up above a part of our original patch, and then I got out and went forward down the patch to see what was going on, and of course by that time the point where my cat had been setting, or slightly ahead of that, it had gone out and the water came in there, but the water had started coming out on the bank, I would say quite a bit below the floor of the canal, of the ditch; I wouldn't know how much, but pretty well down to the toe or the base of the lower fill of the bank.

Q. And was that below the bottom or north of where you had made your first patch?

A. It was north of it, yes, quite a ways. In fact, its trenchway made into the old fillway or old washway made a sort of a fork or wye as it came back in, which was visible there until we filled it up with muck and spoiling.

Q. In your opinion, was that second break any part of the first break? [705]

A. Well, I couldn't say—

Mr. Lytle: Object to that as the witness not having shown himself qualified.

The Court: Objection sustained.

Q. (By Mr. Hess): From your observation as a dirt mover, a mover of earth and contractor, state whether or not there was as much machinery and

(Testimony of Wiley A. Clowers.)

equipment in there from the time of your first break, and when you were in there operating, and all during the time of the second break, as could be efficiently used in that operation?

A. Of course, I can only speak from how well we were supplied with materials and the amount of work we could do in the area where I worked, but I don't believe that any more Caterpillars could have been employed, and I know that we were never short on gravel or any other material for making our compacted fill. I don't believe that any more equipment could have even gained any time. I believe that it would have held up those that were there enough to more than offset its advantage.

Q. And state whether or not everyone was instructed and was working as continuously and as fast as the operation could take?

A. Yes, our instruction was efficient, and then I believe the attitude on the part of workers was to get it finished, as we were all residents of the area.

Mr. Hess: I think that is all. [706]

Cross-Examination

By Mr. P. J. Gallagher:

Q. Mr. Clowers, when you finally began to bulldoze this earth away how far did you cut the bank back south of the first break there?

A. At what point, the bottom or the sides?

Q. Well, let's take the bottom. How wide was the bottom of the V-shaped cut there when you first began to work?

A. You mean—I don't get you fairly, sir.

(Testimony of Wiley A. Clowers.)

Q. Well, as I understand, there was sort of a V-shaped cut there where the water went out at the time of the first break.

A. You mean at the point of the break itself?

Q. Yes.

A. Yes, I understand that now. That point was cut out by my brother before my arrival there. However, I was able to see it after it was cut out.

Q. How far out on the south bank did you cut that?

A. Estimates only, about twenty-five feet.

Q. And how far did you cut the north bank away?

A. Nearly the same amount.

Q. What was the total over-all width between the two banks when you finally got through cutting away the debris in that area?

A. About sixty-five or seventy feet, I believe, was opened up for a keyway. [707]

Q. And those two banks you cut away immediately north and south of the break, those were cut away because they were too wet to tie into?

A. I don't know the purpose, sir. I do know the material that we got out of the way was wet only at the edges exposed to water flow. If the material was firm we used it for stockpile and we were able to drive over it as we went out.

Q. Yes, it was piled up and used, but it was wet enough so that there was no foundation to build into until you got back the distances you gave me, twenty-five feet on either side?

A. No, I think perhaps you misunderstood there.

(Testimony of Wiley A. Clowers.)

Of course, all the reasons were not explained to me, but I later saw what was done, but those cuts were made and keyway cut down in them for core wall and gravel layer; then we in turn sloped down both those banks so that they in turn formed a part of the key or stiffened up part of the hole we first opened up.

Q. Yes, but you had to get back some distance from where the cut went through the bank in order to get a foundation to hook onto.

A. I suppose that was the purpose of cutting back. Anyway, we put the keyway in.

Q. Yes, and when you were removing that dirt, especially in the middle of the cut, it was wet, wasn't it?

A. Well, yes, it wasn't dry. However, we were able to drive over it all the time. [708]

Q. Well, you can drive over pretty wet ground with a cat, can't you?

A. Not if you stack it very deep.

Q. How wide was the bottom of that cut washed out when you got there, or do you know?

A. Pardon?

Q. How wide was the bottom of that cut washed out when you got there, or do you know?

A. I don't remember, sir.

Q. I think you said your brother worked the first shift anyhow, didn't you? A. Yes.

Q. And about how wide was it when you got there? What I mean by that is, what was the dis-

(Testimony of Wiley A. Clowers.)

tance across the bottom of the entire cut when you started putting your keyways down?

A. I believe sixty-five or seventy feet.

Q. At the bottom?

A. Yes, that is as my memory recalls it.

Q. And then you put keyways about sixty-five or seventy feet long on the bottom of the canal?

A. Yes, that is my estimate of it.

Q. And your distances, I suppose, on the top would be a little more than that, flare out on either end?

A. I don't think keyways are made that way.

Q. I am not talking about keyways. I am talking about the [709] hole in the wall.

A. Oh, yes, of course it was sloped down in both directions.

Q. Now, when you got this first break ready to lay your keyway, then, as I understand the operation, you dug as far into your keyway trench as you could with the Caterpillar and then someone else came along with a pick and shovel and finished up the job?

A. Yes.

Q. In the meantime you boys in the cats were getting the material ready and bringing it in and tamping it down and impacting with the operation of the machine?

A. No, we were at that time cleaning up the spoil pile in the adjacent area and consolidating the materials.

Q. But then when you finally got them consolidated you pushed them in?

A. Yes.

(Testimony of Wiley A. Clowers.)

Q. And then that operation continued there until you got the bank up about a distance of about four or five or six feet?

A. I worked intermittently, of course, on that bank construction. At the time that I left I would estimate that it was about four or perhaps four and a half feet high, the fill.

Q. When was it that you quit there?

A. I left there the morning of the second—of the day preceding the second break. I don't remember the exact time, but it seems to me just about noon I quit, perhaps just after [710] service time.

Q. That would be on noon of the day preceding the turning of the water in?

A. Well, of the second day, at least. I know I was called back about midnight.

Q. Of the second day? A. Yes.

Q. Now, how about this little cofferdam? Did you put that in? A. No, I did not.

Q. Let's see, there were two cats working there, and finally both cats got it built up to, say, about four and a half or five feet, or maybe six feet?

A. I couldn't say how far.

Q. All right; and were you driving your cat in from the north side? A. At what time, sir?

Q. Well, at any of the period? Which side were you working from?

A. Well, we were working, either one of us, from both sides, whichever the operation called for. We surfaced for awhile on the south side of the wasteway, and of course at that time we crossed

(Testimony of Wiley A. Clowers.)

the wasteway and went into the pen of the break.
(sic.)

Q. Now, on this key wall that you put in the bottom of the canal, that is, as I understand it, a trench three or four feet deep and filled with selected material. Now, was there [711] any effort made to carry up a similar key wall with selected material as you filled the canal on up, or did you just throw in the material at hand?

A. Well, the entire patch that we constructed was of the same material.

Q. Was that key wall that you put in the bottom of the canal extended or keyed into the respective banks on either side? A. Yes, it was.

Q. Okeh. Now, when the dam went out the second time you operated your cat in very much the same way you did the first time?

A. You mean in its repair?

Q. Yes, in its repair. A. Yes, in general.

Q. And did you cut back from the point of the second break, did you cut back then to the new bank you built the first time?

A. I don't believe I understand what you mean.

Q. Well, this second break went out at some eight or ten feet beyond the point that you had built the new embankment to.

A. Yes, it went out north of the——

Q. Yes, some ten or twelve feet.

Mr. Hess: Well, now, we object to his assuming some ten or twelve feet. Mr. Gallagher is testifying, not the witness.

(Testimony of Wiley A. Clowers.)

The Court: Go ahead. Objection overruled. [712]

Q. (By P. J. Gallagher): If I am wrong about the distance, you correct me on that. How far from the new fill was the break?

A. Well, the only point that I remember is that the water as it ran out washed away until it was washing on the base of our new patch. However, it seemed to fail to affect it, because it was solid and unblemished afterward.

Q. This dirt immediately north of the new fill was part of the second break?

A. Yes, it washed clean of all the water. However, the break happened just a little bit north yet of there.

Q. Oh, I presume it washed down the side.

A. Yes, somewhat as it did the first time.

Q. And when you got into that second break to bulldoze that out did you find a lot of soft material in there?

A. You mean in the fill we constructed?

Q. Well, I presume you trimmed that down the way you did the first break? A. Somewhat.

Q. And when you did that did you find some soft material in there?

A. No. We found, of course, the same wetness that we had put in there.

Q. But it wasn't soft.

A. No. Neither was the first 'dozing soft. We had about all [713] we could do with our cats to cut it out.

(Testimony of Wiley A. Clowers.)

Q. Where was the new material? High up on the bank?

A. The soft material was up on the bank.

Q. Could you determine where it came from, what location in the ditch bank it came from?

A. Oh, yes. We could see the dragline working, of course. It was coming, seemingly, from inside—at least the inside portion of the lower bank on the north side of the break, and from down underneath the surface of the bottom of the ditch some distance—I would say the bottom of the shovel was going down six feet or so from the base, bottom of the ditch. To say just exactly what point in there the wet material was coming from—well, I could only see it as it was dug out, but it seemed to be rather deep.

Q. Now, you spoke about a time when your attention was called to this vortex in the second break and the water gushing out on the downstream side. How far from the base or the toe of the canal bank was that water coming out?

A. That, of course, would be an estimate, because I was pretty excited at the time, but I would say between forty and sixty feet, in that vicinity. I wouldn't want to try to come closer than that.

Q. I didn't make the point clear. We will say this was the outside of the bank and you were looking off down here and the water was coming out somewheres here (illustrating), was [714] it half-way or three-quarters of the way down the bank?

A. No, nearly all the way down the bank. The

(Testimony of Wiley A. Clowers.)

particular bank at that point was steep to natural ground and just carried on, except at two or three times in carrying down the original bank there was some slough material that had come across it and it was in that slough material.

Q. And was it coming out above the surface of the ground where it hit the Shaw field there?

A. Well, just at the surface.

Q. Just at the surface? A. Yes.

Q. And, of course, that was quite a stream that came out of there?

A. Well, it seemed to me to be quite a stream at the time, yes.

Mr. P. J. Gallagher: I think that is all, Mr. Clowers.

Redirect Examination

By Mr. Hess:

Q. How far was this second cut or washout from down below—that is, the main portion of the washout, from below the upper point of your base or toe of the first patch that you had made for the first break?

A. I don't believe I got you clearly there, sir.

Mr. Hess: Will you read that, please? [715]

The Court: Read it.

(Pending question read.)

Q. (By Mr. Hess): That is, where you first saw it come through?

A. Well, you, of course, know or realize, I hope,

(Testimony of Wiley A. Clowers.)

that the immediate point of the break was not the point after the—was not the center of the washout after the water had run out the hole, and we could only estimate where that was exactly for the reason that all the water that was in the canal ran out through that hole after the break, cutting it back, of course, up to the upstream side——

Q. And then you would have to fill in?

A. That is right, and I would still have to estimate that distance forty to sixty feet.

A. In other words, the top of the bank fell down in and the water rushed down in there, is that it?

A. Yes, including the north wing or upper part of our wedge-shaped patch. The north end of it fell in and washed down with the break and the erosion that followed.

Mr. Hess: That is all.

Mr. P. J. Gallagher: That is all.

(Witness excused.)

The Court: Court is in recess.

(Short recess.)

Mr. Veeder: Call Otto S. Pettet. [716]

OTTO S. PETTET

was thereupon produced as a witness in behalf of the defendant herein and was examined and testified as follows:

The Clerk: Will you state your name, please.

A. Otto S. Pettet.

The Clerk: How do you spell your last name?

(Testimony of Otto S. Pettet.)

A. (Spelling): P-e-t-t-e-t.

(The witness was thereupon duly sworn.)

Direct Examination

By Mr. Veeder:

Q. Where is your home, Mr. Pettet?

A. My home is about half a mile west of the head of the Malheur Siphon.

Q. How old are you, Mr. Pettet?

A. I am forty-nine.

Q. What is your position?

A. I am a ditch rider.

Q. By whom are you employed?

A. By the Owyhee Irrigation District.

Q. Would you describe your duties as a ditch rider?

A. Well, my duties is to deliver water to individual farmers and——

Q. Could you state from where you deliver water to individual farmers?

A. Well, I ride from 38.9 on the main canal to 33.1. [717]

Q. That is the North Canal?

A. That is right. And then I take in some of the 38.9 ditch down about a quarter below .07.

Q. How long have you been employed as a ditch rider?

A. I have been—this is the twentieth year.

Q. How long have you been riding the segment of the ditch to which you have just referred?

A. I believe nine years.

(Testimony of Otto S. Pettet.)

Q. Would you proceed and tell the remainder of the duties which you have as a ditch rider?

A. Well, I deliver the water and put it out to the farmers according to their acreage and according to their requests up to the capacity of the ditch.

Q. And how do you do that?

A. Well, I turn the water down these laterals out of the main ditch and then divide it according to acreage.

Q. Do you have any other responsibilities as a ditch rider?

A. Well, I maintain ditches, help clean them, keep the weeds out and all of the obstructions out of the ditch, and keep the gates and weirs free, and then, of course, I keep the account of the water for the season for each water user.

Q. What activities do you perform for the security of the North Canal?

A. Well, I patrol the North Canal and watch for any leaks or breaks in the ditch. [718]

Q. What are your instructions with respect to seep area that you observe?

A. Anything that doesn't look sound or anything that looks like it might be dangerous I am supposed to report to the office.

Q. Are you acquainted with the seep on the Hust place? A. Yes, sir.

Q. What activity do you perform with regard to it?

A. I watch that seep, just to see if it gets

(Testimony of Otto S. Pettet.)

stronger and just to see if it develops anything more than it ordinarily carries.

Q. Do you perform any other functions in which you contact the farmers in that area?

A. Well, I take their crop reports in the fall of the year, and that is about all so far as——

Q. You are well acquainted with the farmers in the area?

A. Quite well, yes, sir, I am.

Q. Are you acquainted with the break that occurred in the North Canal on July 14, 1946?

A. Yes, sir.

Q. Did you patrol the segment of the canal the day of the break? A. I did.

Q. What did you observe in the segment of the canal which breached?

A. I didn't see a thing there that was unusual at all.

Q. Would you describe the canal at that point?

A. Well, it comes around the bend there, up south of there, and kind of straightens out. It looked to me or ordinarily would be a fairly safe place in a ditch.

Q. At what time did you patrol there——

A. I patrolled there, I would say, about 8:45, and came back over it about 9:15, I would say.

Q. You passed over the segment which broke on two occasions? A. That is right.

Q. Are you acquainted with the Ben Shaw property? A. Yes, sir.

Q. Would you describe the land on the Ben Shaw

(Testimony of Otto S. Pettet.)

place immediately below the break prior to the time of the break?

A. Well, that piece of land was in red clover at that time. It is a very short little point in there. I wouldn't—it runs down, I would say, maybe four hundred feet that he irrigated, into a draw in his field.

Q. There was a crop on the land?

A. That is right.

Q. Are you acquainted with Ben Shaw?

A. Very well.

Q. Were you ever advised of any seep in that field? A. No, I was not.

Q. No notice whatever of any seep?

A. No, sir.

Mr. P. J. Gallagher: This is leading and suggestive, your [720] Honor.

Q. (By Mr. Veeder): When were you notified of the break in the canal?

A. I was notified about noon; I would say about 12:30.

Q. What did you do then?

A. I immediately got in my car and drove up to the break.

Mr. Veeder: No further questions.

Cross-Examination

By Mr. P. J. Gallagher:

Q. Mr. Pettet, you say you checked the seep that comes up on the Hust place?

A. I check it occasionally.

(Testimony of Otto S. Pettet.)

Q. How long has that seep been running there?

A. Well, I am not sure, but I remember that has been running there for three or four years.

Q. Has it increased in volume?

A. I don't believe it has.

Q. And are you familiar with the seep that is just north of the north edge of the Shaw place, in that gulley?

A. Yes.

Q. How long has that seep been there?

A. Well, I have known of it three or four years anyway.

Q. In riding the ditch, as you call it, you drive a car along the roadway on top of the ditch?

A. That is right. [721]

Q. Did you occasionally get down and look at the discharge in the draw above, on the north side of the Shaw place?

A. I occasionally do.

Q. Did you do it on that occasion?

A. I didn't that day.

Q. And do you keep a check on that to see if that is increasing or not?

A. No.

Q. That water, in your opinion, comes from the ditch, some place in the ditch?

A. Well, yes.

Q. And how much would you estimate that flows in miner's inches?

A. It is rather hard to tell. It seems like it comes into that draw in kind of a fan shape.

Q. It comes in from a kind of a spread-out area?

A. That is right.

Q. And then gathers in the draw and runs down the draw?

A. Yes.

(Testimony of Otto S. Pettet.)

Q. Have you gone down the draw, so you can estimate the amount of discharge?

A. No, I haven't.

Q. And you never did walk up across the Ben Shaw place? A. No, I haven't.

Q. And such examination as you have made of the Ben Shaw [722] place is what you looked and were able to see without coming down the ditch bank? A. That is right.

Q. Did you know about Shaw's efforts to cut his hay crop there in 1945? A. No, I didn't.

Q. You didn't know anything about that. Did you know anything about George or Phil Matherly trying to plow in there and getting his equipment and stuff out? A. No, I didn't.

Q. You don't know of anything that would indicate to you that the Shaw place was wet?

A. No, I don't.

Q. And you never, as you said before, got down and walked across it? A. No, I didn't.

Q. Now, when you got out there, you were notified, you say, about 12:30 Sunday, on the day the ditch broke? A. That is right.

Q. And you drove up as fast as you could, I presume? A. That is right.

Q. How far did you have to drive, Mr. Pettet?

A. How far?

Q. Yes.

A. Well, that is—let's see—well, about three miles, I [723] would say.

Q. How were you notified? By telephone?

(Testimony of Otto S. Pettet.)

A. No; George Hust drove to my place and told me.

Q. George was perhaps one of the first fellows to see the break?

A. Well, I kind of think he was one of them, yes.

Q. Then, without further delay, you and George went up there?

A. No; George left and I went up alone.

Q. How much water did you see discharging from the ditch at that time?

Mr. Veeder: I object as the witness not qualified.

Mr. P. J. Gallagher: Well, just generally.

The Court: If he knows, he can tell. If he doesn't know he can say he doesn't know.

A. Well, I don't know.

Q. (By Mr. P. J. Gallagher): What part of the ditch bank was the water coming out of? Halfway down?

A. I don't know as I understand that, now.

Q. Well, the water was coming out of the lower side of the bank?

A. That is right.

Q. When you got there?

A. That is right.

Q. And how far up the bank was the water coming out, from the toe?

A. Well, that is kind of hard to say. I just couldn't say. [724]

Q. Well, would you say it would be a third of the way up, or halfway up, the bank?

A. Well, it wouldn't be over a third, I would think.

(Testimony of Otto S. Pettet.)

Q. You think it would be about a third of the way up?

A. Well, that would be a fair guess.

Q. And who were the first people that came there?

A. Well, the first people, I think, were Mr. Spofford and Mr. Bolitho.

Q. And then they got to work and you got to work?

A. Well, I did the only thing I could do. I was on the other side of the break from them, and it was kind of noisy, and I just couldn't do anything.

Q. They were on the north side and you were on the south side? A. Yes.

Q. And what did you do? Did you stay there all afternoon?

A. I stayed there a short time.

Q. And then you went on back home?

A. That is right.

Q. Had the ditch fallen in at the time you were there? A. Oh, yes.

Mr. P. J. Gallagher: I think that is all.

Redirect Examination

By Mr. Veeder:

Q. Did you ride the ditch every day as part of your duties? A. That is right. [725]

Mr. Veeder: I have no further questions.

The Court: That is all.

(Witness excused.)

Mr. Veeder: Call Mr. Senger. [726]

HENRY L. SENGER

was thereupon produced as a witness in behalf of the defendant herein and was examined and testified as follows:

The Clerk: Will you state your name, please.

A. Henry L. Senger, S-e-n-g-e-r.

(The witness was thereupon duly sworn.)

Direct Examination

By Mr. Veeder:

Q. Where do you reside, Mr. Senger?

A. Boise, Idaho.

Q. How old are you? A. Seventy.

Q. What is your occupation?

A. Civil Engineer.

Q. Would you give a statement of your general education and background?

Mr. P. J. Gallagher: Oh, we will admit his qualifications, to shorten it up.

Mr. Veeder: We would like to have him give them.

The Court: Go ahead, generally.

A. I graduated with the degree of Bachelor of Science from the University of Nebraska in February of 1903, and worked for an organization in Chicago called the Barlow Company for nine years on hydroelectric construction and railroad shopwork, and finally, in the summer of 1908, came to Homestead, Oregon, [727] where they were going to build a hydroelectric plant on the Snake River at a point called the Oxbow in Snake River. I stayed on that

(Testimony of Henry L. Senger.)

work for four years, until the work was abandoned unfinished, and came to Boise and worked for the interurban railroad, which was then under construction, between Napa and Caldwell and Boise, part of the loop system.

In the fall of 1912 I was transferred to Swan Falls on the Snake River and reconstructed a portion of the power plant at that time, and since that time I have been engaged in building power plants and maintenance of power plants and canals and ditches, and things that appertain to the production of power, since my return on the first of this year.

Q. Have you constructed earthen canals through areas somewhat similar to this?

A. I constructed one major canal that had a capacity of 6500 second-feet. It had earth embankments, but the bottom was made of a sort of a rock formation which probably was harder than soil.

Q. For whom did you perform those services?

A. Idaho Power Company.

Q. Did you ever work generally in earth fill, perform earth-fill work, in construction?

A. In the nature of abutments to hydroelectric constructions, and things of that nature.

Q. Were you present in the court room at the time that Mr. Boden [728] testified with respect to the construction of the canal? A. I was.

Q. And, in your opinion, were the methods which he followed and the means which he used in the construction of this canal reasonable engineering precautions? A. I would think so, yes.

(Testimony of Henry L. Senger.)

Q. Have you investigated this segment of the canal where the breach occurred?

A. Yes, on April 21st, and continuing through four additional days.

Q. Did you observe the type of construction throughout this area? A. Yes, sir.

Q. In construction of this character is it customary to construct a core bank in the bank of the canal?

A. Core bank in the bank of the canal?

Q. Of the lower bank?

A. As distinguished from a core—you are talking about the embankment?

Q. The core trench is what I meant.

A. The core trench as distinguished from the core in the embankment?

Q. Yes, that is what I meant.

A. No, I would say it is not usual to build a core trench.

Q. Do you know of any instances in which that has been done? [729]

A. No, I have never done that myself.

Q. In the construction of a canal of this character what are the methods that are used, precautionary methods which are used, in engineering to determine and ascertain the security of the canal? What kind of investigation do you make with the dirt removed?

A. Judged from my experience, when the ground is opened up the engineer can see the character, the kind of ground it is, and, judging from what he sees and his experience, why, he makes determinations

(Testimony of Henry L. Senger.)

of whether there is anything further to do, and from my observations that I have seen over there in this compacted sandstone I would say that there would be no necessity for any additional work.

Q. Did you hear Mr. Gordon testify with respect to the stratum of material beneath the bottom of the canal some four feet? A. Yes.

Q. Would it have been a reasonable precaution to drill down into that area to ascertain the existence of that stratum at the time the constructon was made?

A. Well, I would say this, that it was something hidden, he didn't know it was there, and there would be no necessity to drill for it, because even then you may not have found it. As I got the testimony, it wasn't found in the first wash and drilling there would have shown nothing. Of course, there are occasions in my experience where I have found where water issues, [730] probably, out of a hole, you might drill a foot or two from it and miss it entirely.

Q. Have you had any experience with respect to seeping canals or other structures?

A. Yes, sir.

Q. Will you state to the Court what is indicated by the seepage of the character that you encountered?

A. Well, on the Horseshoe Bend Canal, which is a power canal—of course, it serves a useful purpose of transmitting water for power rather than for irrigation, but the hydraulics are all the same—it

(Testimony of Henry L. Senger.)

has an earth embankment and water seeps through this earth slowly and comes out as clear water at the base, and, just as testimony has shown here, when you release the water out of the ground and it comes out clear and there is no change in the volume we do not consider it dangerous. As a matter of fact, that is the natural condition. Whenever there is danger to an earthen embankment it is because it doesn't bleed out, the water is contained in it.

Q. In your investigation did you observe the seepage on the Hust place south of where the breaks occurred?

A. At a point there was what appeared to be a small spring on the Hust place, so-called, which was, I think, south of the break.

Q. In your opinion, is that a dangerous condition?
A. Not in my opinion. [731]

Q. In your investigation did you go over the property situated as appearing on Plaintiffs' Exhibit 82, that 4.3 acres there?

A. The Shaw place?

Q. That is correct. A. Yes, sir.

Q. What type of investigation did you make?

A. When I first came on the ground on the 21st of April and the four subsequent days I went over, very carefully over, the ground looking for some source of seepage or wetness, or something of that kind, on this ground. At that time the clover and the alfalfa shoots and the small leaves were just appearing, we couldn't see anything then, of course,

(Testimony of Henry L. Senger.)

excepting that greenness appearing at that time, but the ground was absolutely dry. There was a small farmer's ditch at the toe of the low embankment, that is, the outer embankment, before the repair was made, and along that small farmer's ditch there were a few scattering cottonwoods growing, I think there were two or three sprigs of willows at one place. And since the break had been made, apparently, they re-routed this small farmer's ditch to a point maybe eight or ten feet below where the break occurred. And then I discovered the drain tile which apparently had been put in during construction to bleed out water should there have been any in the embankment, but all these ditches and the drain tile were absolutely dry when I was there.

Q. Have you investigated that area recently?

A. I was over there Monday evening.

Q. Would you state the condition of it at this time?

A. Just as I found it at that time, and in addition to that I dug rather vigorously, put a hole maybe four hundred feet below on the south side of the break, out in the field, and we dug down and measured eighteen inches and it was hard and dry all the way down.

Q. In your investigation did you ascertain the depth of the topsoil in that area?

A. Oh, it varies. The underlying layer of hardpan beneath the topsoil is of an undulating and irregular nature, and the depth of the topsoil is possibly from a foot to eighteen inches and possibly

(Testimony of Henry L. Senger.)

in places maybe two feet, possibly, depending on the shape of the underlying hardpan.

Q. What is the effect of that hardpan underneath the topsoil in an area that is irrigated?

A. That was hard soil before the breaks occurred and is continuing across these two washes of the first and second so-called breaks, is a continuous layer, it is now continuous across one of the breaks, unbroken even after all the water went over it; so if we could visualize a hardpan beneath the soil with a ruffled surface which would make basins of various sizes that would contain water, then the water from the farmer's ditch would flow down on this sort of a roof and hardpan and [733] fill these basins of various sizes and hold water; then a farmer has the—I am not a farmer, but I have seen them do it, when they went to take off a crop of hay, for instance, they shut down the ditch to dry the field so they can drive over it. This water, then, it is still in these cups or basins of various sizes in this hardpan, it can't drain out, so it keeps that still moist until it can evaporate through the surface.

Q. Would that have explained the situation that the plaintiffs' witnesses have described in the field as showing the seep—that which is supposed to be the seep area in there?

A. In my opinion, yes.

Q. Could that have come from the farmer's ditch?

A. I think that is where it did come from.

(Testimony of Henry L. Senger.)

Mr. Veeder: That is all.

Cross-Examination

By Mr. P. J. Gallagher:

Q. Was there water in the ditch when you went out there, Mr. Senger?

A. In the main canal?

Q. Yes. A. Yes.

Q. You had no opportunity to observe the mountainside side of the canal, did you? [734]

A. You mean the hillside?

Q. The hillside, yes.

A. Oh, yes, I was all up and down the ditch.

Q. Pardon?

A. I was all up along the ditch. I could observe the part above the water.

Q. Above the water? A. Yes.

Q. You were not able to observe the structure of the ditch below the water line?

A. No, I couldn't see under the water.

Q. Now, in your work I presume you have endeavored to construct your canals for the purpose of conserving water as well as transporting it?

A. Well, yes, that is true, and in a hydroelectric canal we intend to conserve the head of water and get all the water we can. Conserving the head is more important than in an irrigation canal.

Q. Assuming that in the construction of a ditch you run into a bed of ground that contained gravel and loose, pervious structure for a distance of five

(Testimony of Henry L. Senger.)

or six hundred feet in spots and for a depth averaging from a foot and a half to three or four feet, the ditch just cross sectioning that gravelly structure that was up on a hillside, would you think good engineering would require you to take some precaution against [735] that leaking?

A. I wouldn't say that I would agree with that in this case, but, assuming that it is a hypothetical question, I would answer in the affirmative.

Q. Assuming it is a hypothetical question?

A. Assuming it is a hypothetical question, I would answer in the affirmative.

Q. You would do something toward finding that?

A. I think I would do some protection, yes, if that was the case.

Q. I don't ask you to agree about the facts.

A. No, I haven't.

Q. You are appearing for the other side.

A. Yes.

Q. And if you watch that ditch over a period of two or three years and you discover that immediately underneath, in the area underneath, the land is being soaked to the point that the man couldn't farm, would that cause you to look for a source of water that might be seeping through the bank of the canal?

A. Yes, and, as I have said, the source of water was the farmer's ditch.

Q. You are assuming that any water that came on the place came out of the farmer's ditch?

A. Yes. [736]

(Testimony of Henry L. Senger.)

Q. Did you hear the testimony of the witness Matherly, who tried to plow before the irrigation season started and got his tractor bogged down?

A. Yes, sir.

Q. Do you think that water remained in the Shaw land all winter long to the extent that his tractor bogged down in the spring?

A. Yes, through snow and rain in the winter.

Q. How long have you lived in this community?
A long time, haven't you?

A. At Boise?

Q. Well, in the Snake River Valley?

A. Since 1914 in Boise. I came to Boise in 1912.

Q. And you think there might have been enough rainfall on the Shaw place to bog a tractor down?

A. No; I said that the water that did fall was contained in these small basins on account of this impervious stratum.

Q. Do you think that the seepage that you saw coming out on the Hust place is perfectly safe, nothing to worry about, so far as the safety of that structure is concerned?

A. We had similar things on the Idaho Power Company system that we didn't worry about at all.

Q. Well, that isn't the question.

A. Well, that is based on my experience. I would say no.

Q. You realize, don't you, that this canal did go out? [737]

A. Yes, from a hidden cause.

Q. And where was the water coming from, in

(Testimony of Henry L. Senger.)

your opinion, to supply that hidden defect that resulted in the ditch going out?

A. Well, my judgment of the stratification over there, why, it could come from 'most any place, because the stratifications aren't continuous, they are made up of interlaced little flows, and they might go down or sideways or 'most any direction. You never can tell the source of water by looking at the top.

Q. But the water has to come from some place to liquefy that stratification.

A. Yes, that is true. We have some cases on the Idaho Power Company that comes a quarter of a mile, but I don't know where it comes from.

Q. In a broken stratum?

A. Well, I don't know.

Q. Now, if you were operating that ditch, with the responsibility of keeping it in operation for the supply of water for irrigation of all of these lands, and you found it seeping through the side of the ditch to the extent that I have just remarked to you, would you have tried to seal the ditch or seal its sides in an attempt, at least, to stop that?

A. Well, as I get the testimony, that isn't the case, it didn't seep out. I didn't see any evidence.

Q. No, I am asking you to assume that for the purpose of the question. [738]

A. If this is a hypothetical question——

Q. Now, take my assumption on that as I give it to you, then answer the question.

A. If you would repeat the question, please.

(Testimony of Henry L. Senger.)

Q. Assuming that you were operating this ditch and you were the superintendent or an owner of it, with the responsibility of getting the water down to these farmers, and at this particular spot you knew the water was coming out of the ground at the toe of the canal over an extended area, and you knew the ditch was not lined inside, you knew it was cut through a gravelly, porous stratum, would you then have taken some steps to have sealed that canal on the inside of the canal in an attempt to stop the water?

Mr. Hess: Just a minute——

A. I would, yes.

Mr. P. J. Gallagher: He has answered.

Mr. Hess: I want to put an objection in there as assuming a state of facts not based on the facts of the case.

The Court: Oh, I think he can answer.

Q. (By Mr. P. J. Gallagher): Now may we get your answer? A. I said yes.

Mr. P. J. Gallagher: That is all.

Redirect Examination

By Mr Veeder:

Q. What would be the effect on the North Canal of continuous [739] operation for a period of eleven years, that is, running the water through the North Canal for a period of eleven years?

A. Why, it should improve the condition.

Q. It should what?

(Testimony of Henry L. Senger.)

A. It would improve the condition.

Q. What would it do with respect to sealing the canal?

A. It would continue to seal it tighter each year.

Mr. Veeder: That is all.

Recross-Examination

By Mr. P. J. Gallagher:

Q. You mean in the manner in which the experience up there shows?

A. I mean that an earth embankment that is subjected to water for a long time improves in condition each year and gets tighter.

Q. To the point where it blows out?

A. Well, this is a hidden thing. I am talking about the earth embankment. I don't know anything about what was underneath it.

Mr. P. J. Gallagher: That is all.

Mr. Veeder: That is all, Mr. Senger.

The Court: Now, as I understand you, at the present time this Shaw place is absolutely dry?

A. That is right.

The Court: That is a highly dangerous condition, isn't [740] it, according to your testimony?

A. If they turn water into—no, I don't think so.

The Court: No? I thought that was what you said, that if it was not seeping through there that that indicated a very highly dangerous condition, that the bank was not letting water through and it was banking up behind there.

(Testimony of Henry L. Senger.)

A. Well, if there is any seepage it is going down underneath to some location that is not visible.

The Court: Well, as I understand your testimony, whether the bank is dry or whether it is full of seeps, it does not in either case indicate a dangerous condition?

A. No, if there is seepage and if it is relieved, then I don't think it indicates a dangerous condition, but if there is a seepage and it is contained underneath it builds up a pressure.

The Court: The only time it is dangerous is when you can't tell anything about it?

A. Well, that is about it—if it is hidden it is pretty hard to tell anything about it.

The Court: Well, you assume it is hidden, but you say that in any other condition if that hillside is dry down below then that does not represent a dangerous condition?

A. Well, if the hillside is——

The Court: Answer my question. I say that you have said here, and this is your testimony, that if that hillside is dry that does not represent a dangerous condition; is that correct? [741]

A. That is right.

The Court: And likewise if there was a lot of water seeping down there, why, that shows that the bank is bleeding and therefore in good condition?

A. Well, if it bleeds out, yes, I don't think it is a dangerous condition.

The Court: In other words, either way is no sign of danger?

(Testimony of Henry L. Senger.)

A. Well, if it is hidden in there.

The Court: Well, I don't care anything about "hidden." I say you think if that bank is dead dry that that is not dangerous? A. Yes.

The Court: You likewise say that if it is seeping and bleeding down there that is not dangerous?

A. Yes.

The Court: What is dangerous?

A. An indication is usually nothing that you can see. In other words, if I might illustrate——

The Court: Well, you can see a seep.

A. Yes.

The Court: And you can also see it dry?

A. Yes. I didn't observe any seep there, so I have to say it was dry.

The Court: So that is what I am asking you—what would be an indication of danger to your mind? [742]

A. Well, I would say an excessive seep that may have water to an extent that the water becomes roily and contains particles of sand.

The Court: Oh, yes, about the time the canal went dry that would be dangerous?

A. Oh, no, you can see that a long time before there is danger. That is a matter of inspection, and we have operators go over these canals to see if there is any change in the amount of water that might come clearly out of these seep holes.

The Court: And I take it, also, that you mean that if you constructed a canal and you didn't hap-

(Testimony of Henry L. Senger.)

pen to see the particlular stratum you had no responsibility for it?

A. Well, if there is no indication there is no reason to try and expose something that you don't know exists.

The Court: Well, there is some indication that there might be a different type of stratum there, isn't there?

A. Well, I spent three days digging in it and I would say it was a rather hard sandstone and I wouldn't expect that there would be any danger in that if the canal was dug entirely inside of this formation.

The Court: Well, you know it did go out.

A. Yes. If I might digress, we had a failure in a canal on the Idaho Power Company system, where the thing was operating twenty years. Now, we don't know what caused it, I don't know where the water came from. And if the Bonneville Dam goes [743] out after twenty years the engineers who built it don't have any responsibility for that. I don't know anything about the Bonneville Dam.

The Court: I am asking you. In other words, if you built it and it stays that is good engineering, and if it goes out that is still good engineering?

A. Well, I don't know about that.

The Court: Well, that is what you are saying.

A. Well, you take an element of risk in whatever you are doing, a calculated risk, and a matter of economy.

The Court: Well, I don't think I will examine

(Testimony of Henry L. Senger.)

you on the economy. That is all. Would you like to ask him some more questions?

Mr. Hess: Just a minute, your Honor.

Mr. Veeder: We have no further questions, your Honor.

Mr. P. J. Gallagher: Could I ask him one question, your Honor?

The Court: No, you have already covered it. I think we will let it go at that.

Mr. P. J. Gallagher: That is all.

The Court: That is all.

(Witness excused.)

Mr. Hess: Would your Honor give us about a ten-minute recess?

The Court: Yes. [744]

(Short recess.)

Mr. Hess: If your Honor please, the defendant rests.

Mr. Lytle: If your Honor please, the plaintiffs in 3871 rest.

Mr. P. J. Gallagher: And the same in 3669 and these other cases.

Mr. Hess: And I presume that applies to all the cases under consolidation?

Mr. Lytle: Yes.

Mr. Hess: As to the failure-to-deliver-water cases.

The Court: All right. Then, according to what was said at adjournment, I will now adjourn court until tomorrow morning at 9:00 o'clock.

(Whereupon, at 4:40 o'clock p.m., Wednesday, June 16, 1948, the trial of the above-entitled cause was suspended, the Court adjourning to 9:00 o'clock a.m., Thursday, June 17, 1948.) [745]

Thursday, June 17, 1948, at the hour of 9:00 o'clock a.m., at Vale, Oregon, the trial of the above-entitled cause was resumed and continued as follows:

Mr. Hess: If your Honor please, it appears that in closing our case yesterday we overlooked the offering of certain exhibits in the record and a few other matters that will take a very short time. We would like to open up the case. Let's see, what are the numbers of the two cases we are on?

Mr. P. J. Gallagher: 3669 and 3871.

Mr. Hess: 3669 and 3871, and the cases consolidated with those cases—we would like to open up the cases and offer some more proof, your Honor.

The Court: Yes.

Mr. Hess: If your Honor please, at this time we offer in evidence Defendant's Exhibit marked for identification No. 34, being the Finding of Feasibility of the Project.

Mr. P. J. Gallagher: There is no objection to that, your Honor.

The Court: Admitted.

Mr. Lytle: One moment, Mr. Hess, while you are on that subject. The pre-trial order, through error, shows 34 as plaintiffs' exhibit.

Mr. Hess: Yes; that is a defendant's exhibit, and may the pre-trial order be corrected in that

respect to show that that is Defendant's Exhibit No. 34 and not plaintiffs' exhibit?

The Court: Yes, the pre-trial order should be amended.

Mr. Lytle: I think, Mr. Hess, that series of exhibits in the Sheff White case are noted as your exhibits, but in 3871 they are noted as plaintiffs' exhibits.

Mr. Hess: Yes, on one page they are.

(Photostatic copy of Finding of Feasibility of Secretary of the Interior, approved October 12, 1926, so offered and received, having previously been marked for identification on pre-trial conference, was thereupon marked received as Defendant's Exhibit 34.)

Mr. Hess: Now, if your Honor please, may the pre-trial order be amended in case No. 3871 to show that the identified exhibits 36, 37 and 38 are shown to be defendant's proposed exhibits rather than plaintiffs'?

Mr. Lytle: That includes 39, 40 and 41.

Mr. Hess: Well, on the sheet that I have it shows as defendant's, the rest of them.

Mr. Lytle: Oh, yes, that does show that.

Mr. Hess: Thirty-six, 37 and 38 are shown as plaintiffs' exhibits, and they should be designated and shown as defendant's exhibits.

The Court: Yes.

Mr. Hess: May the record be changed, your Honor, amended, the pre-trial order? [747]

The Court: Yes.

Mr. Hess: Now, if your Honor please, we offer in evidence Defendant's proposed exhibits, marked for identification, Nos. 36, 37, 38, 39, 40 and 41 in each of the cases numbered 3669 and 3871 and each and all of the cases that have been consolidated in the trial of those cases.

The Court: They are admitted.

Mr. P. J. Gallagher: That——

The Court: Do you want to object?

Mr. P. J. Gallagher: No.

Mr. Lytle: Yes, your Honor, in the matter of 3871 and 3870, we renew our objection to Defendant's Exhibits for identification 36 to 41, inclusive, on the ground and for the reason that they do not tend to prove any issue in this cause between the parties as to those two cases.

The Court: Well, the objection is overruled and the Court will admit the exhibits. Of course, if they are not material to your case I will not consider them.

(The documents referred to, so offered and received, having previously been marked for identification on pre-trial conference, were thereupon marked as follows:

(Photostatic copy of contract between Gem Irrigation District and the United States of America, dated October 14, 1926, was marked received as [748] Defendant's Exhibit 36;

(Photostatic copy of contract between Payette-Oregon Slope Irrigation District and the United States of America, dated October 14,

1926, was marked received as Defendant's Exhibit 37;

(Photostatic copy of contract between Crystal Irrigation District and the United States of America, dated November 28, 1931, was marked received as Defendant's Exhibit 38;

(Photostatic copy of contract between Advancement Irrigation District and the United States of America, dated September 1, 1936, was marked received as Defendant's Exhibit 39;

(Photostatic copy of contract between Bench Irrigation District and the United States of America, dated October 5, 1931, was marked received as Defendant's Exhibit 40; and

(Photostatic copy of contract between Slide Irrigation District and the United States of America, dated October 14, 1926, was marked received as Defendant's Exhibit 41.)

Mr. Veeder: Your Honor, at the conclusion of the Plaintiffs' case the United States moved for a dismissal on the ground that the facts as proved have indicated, in our opinion, that they are discretionary in character and therefore exempt from the [749] provisions of the Act. I would at this time to object to your Honor's ruling on that and denial and have the record note an exception to it.

The Court: Yes.

Mr. Hess: Is there anything else?

Mr. P. J. Gallagher: I think not.

Mr. Lytle: I think not.

Mr. Hess: Your Honor, defendant rests in each of these cases 3871 and 3669 and all of the cases consolidated with them for the trial and on the question of liability.

Mr. Lytle: If your Honor please, I think that before we rest this stipulation that was discussed should be entered into in this case, for the simple reason that the last paragraph in the case is evidentiary and is an admission of the fact, but so far as the flooding cases are concerned, 3870, water from the breaks did inundate portions of the lands described in the pre-trial order.

Mr. Hess: As I view that, Mr. Lytle, we are making stipulations, which will be filed in each of the flooding cases, adopting this record, and these stipulations do not apply and are not a part of these cases here, but they are in the flooding cases; is that correct?

(A conversation between Mr. Hess and Mr. Lytle in an undertone here ensued.)

Mr. Hess: If your Honor please, we rest. [750]

Mr. P. J. Gallagher: Well, we rest too.

Mr. Hess: Now, if your Honor please, in Civil 3669 and in each of the cases consolidated with that case, the flooding case Civil 3870, and 3853, and Civil 3861 to 3865, all inclusive, we have a motion at this time that we desire to file on behalf of the United States for dismissal, and may the record show that a copy of this motion has been

served upon each of the plaintiffs' counsel in the case.

The Court: Well, the trouble is that the—oh, yes.

(A conference between counsel in an undertone here ensued.)

Mr. Lytle: Do you want to correct this copy also?

Mr. Hess: Yes, your Honor. We left one case out, if you notice, and we will have to write it in.

The Court: Well, this motion to dismiss is nothing except something to hold your record. I can treat it, anyway, because I am going to determine this case on the evidence, I will not make up my mind on questions of law, even though I may hold them invalid on the motion to dismiss. I have heard all the evidence and I will decide the case on its merits, that is what I am going to do, so it is immaterial, as far as I can see, as to whether I overrule this motion summarily or that I keep it under advisement. I have no feeling about it one way or the other, whatever you want done technically, because actually I am going to make up my mind on the matters in the light of the [751] testimony. The questions are posed by the pre-trial order, and those I expect to decide on the evidence.

Mr. Hess: As I understand, your Honor, the previous motion was filed, the motion for dismissal?

The Court: Yes.

Mr. Hess: And on this one does the same thing apply?

The Court: Well, all right, I will take it under advisement. It is just a question of technicality. I might just as well overrule it, because I am not going to consider it on this basis anyhow. I will consider it on the merits. Of course, if I find out after considering all the testimony that I do not have jurisdiction I am not going to decide the case on any other ground.

Mr. Hess: If your Honor please, on this question of liability we would like some time for further preparation of memoranda for the Court, and Mr. Veeder is very busily engaged and will be in some other heavy water litigation, and we would like to ask for sixty days for further briefs on the part of the Government on the question of liability.

The Court: Do you see any objection to that?

Mr. P. J. Gallagher: No.

Mr. Lytle: We have no objection, but just one inquiry, and that is with respect to the transcript of the record, and that would be as to whether or not the Court will await a transcript of the record before determination? If so, we would like the transcript of that record before we brief on the facts, as well as the law.

Mr. Hess: I think that would be advisable from both standpoints. I just wonder if we can't get an intimation about when we would have the record, because we would like to have at least thirty days after we see a copy of the record. I think that suggestion is very well taken.

The Court: How about that, Mr. Reporter?

(Short discussion off the record.)

The Court: I will tell you, if you have ordered the transcript——

Mr. Hess: We have ordered it.

Mr. Lytle: We have ordered it.

The Court: ——I will say that I will extend you thirty days after you receive the transcript for the first brief. And how long would you like to have after that?

Mr. P. J. Gallagher: About the same.

Mr. Lytle: We would like to have about the same time.

The Court: Then thirty days after the service of the Government's brief.

Mr. Lytle: Yes, your Honor.

The Court: If the Government then wishes to file any memorandum I will give them five days after your brief is in, strictly applied.

Mr. Hess: Strictly applied. [753]

The Court: And thereupon I will take the matter under consideration, and if at that time I should feel that I should have oral argument I will set it, but I won't set it for oral argument until all briefs are filed.

Now you may proceed to the other cases.

(Thereupon the Court proceeded to the transaction of other business, and thereafter proceedings herein were had as follows:)

Mr. Hess: If your Honor please, we had some

field notes marked here as one of our exhibits that the witness testified from and refreshed his recollection from. If the Court desires to have that for any purpose we haven't any objection, but in the end the Bureau will desire that back, and we just wondered if there is any objection now to it going back to the Bureau or if the Court would prefer to have it. It is not introduced in evidence. And also, relative to the model, No. 53, on account of the heft and bulk of that exhibit we have stipulated between ourselves, if satisfactory with the Court, that that exhibit need not be taken to Portland and kept in the records of the Court, but that it can be kept at the Bureau of Reclamation at Boise, subject to the call of the Court if the Court so desires.

The Court: That is stipulated?

Mr. P. J. Gallagher: That is agreed.

Mr. Lytle: Yes, your Honor. [754]

The Court: Now, then, how about this other? You will have to enter into a stipulation on this. I won't do anything about it unless counsel agree, that is.

Mr. P. J. Gallagher: Oh, it is perfectly all right with us for the Bureau to retain that.

The Court: What is that number?

The Clerk: 65-A.

The Court: The Bureau's Pre-trial Exhibit No. 65-A is released to the United States.

Further matters?

Mr. P. J. Gallagher: No, your Honor.

The Court: At this time the Court adjourns the special term at Vale sine die.

(Whereupon testimony and proceedings in the above-entitled cause at Vale, Oregon, were concluded, and at the hour of 11:00 o'clock a.m., Thursday, June 17, 1948, the special term at Vale, Oregon, was adjourned sine die.)

Certificate

I, Cloyd D. Rauch, hereby certify that I am a Court Reporter of the above-entitled Court, duly appointed, qualified, and acting; that I reported in shorthand testimony and proceedings at the trial of the above-entitled cause, that I subsequently caused my said shorthand notes to be reduced to typewriting, and that the foregoing transcript, pages 1 to 755, both inclusive, contained in volumes numbered I and II, constitutes a full, true and accurate transcript of said testimony and proceedings, so taken by me in shorthand as aforesaid, and of the whole thereof.

Dated this 26th day of July, A.D. 1948.

/s/ CLOYD D. RAUCH,
Court Reporter.

CERTIFICATE OF CLERK

United States of America,
District of Oregon—ss.

I, Lowell Mundorff, Clerk of the United States District Court for the District of Oregon, do hereby certify that the foregoing documents consisting of

complaint, motion to dismiss, motion for more definite statement, answer, motion to bring in third-party defendant, motion to dismiss, pre-trial order, motion for dismissal, order consolidating cases for trial, opinion of Judge Fee, findings of fact and conclusions of law, final judgment, notice of appeal, motion for order for time to file bonds, stipulation, order allowing time to file bonds, designation of record on appeal, and transcript of docket entries constitute the record on appeal from a judgment of said court in a cause therein numbered Civil 3669, in which Sheff White, Orland White and Joe M. White are plaintiffs and appellants, and the United States of America is defendant and appellee; that the said record has been prepared by me in accordance with the designation of contents of record on appeal filed by the appellants, and in accordance with the rules of this court.

I further certify that the cost of filing the notice of appeal, \$5.00, has been paid by the appellants.

In Testimony Whereof I have hereunto set my hand and affixed the seal of said court on Portland, in said District, this September 7th, 1950.

LOWELL MUNDORFF,
Clerk.

[Seal] By /s/ F. L. BUCK,
Chief Deputy.

[Endorsed]: No. 12689. United States Court of Appeals for the Ninth Circuit. Sheff White, Orland White and Joe M. White, Appellants, vs. United States of America, Appellee. Transcript of Record. Appeals from the United States District Court for the District of Oregon.

Filed September 12, 1950.

/s/ PAUL P. O'BRIEN,

Clerk of the United States Court of Appeals for the Ninth Circuit.

In the United States Court of Appeals
for the Ninth Circuit

In the matter of the appeal of the following named
Plaintiffs and Appellants against the United
States of America, Defendant and Respondent.

STIPULATION

SHEFF WHITE, CASE NO. 3669; PETE AND
EUGENE BICART, NO. 3674; J. F. WAL-
LACE, NO. 3675; LOIE BELISLE, NO. 3677;
HARRY G. FRASIER, NO. 3681; CLIF-
FORD PUTNAM, NO. 3683; LEO MONCE,
ET AL., NO. 3684; MARTIN J. RICH, NO.
3686; FRANK BALBOA, NO. 3687; GROVER
C. FINDLEY, NO. 3689; BASIL TRUE-
BLOOD, NO. 3693; JONESIE DELEON
SCOTT, NO. 3716, HOWARD AND B. G.
BYBEE, NO. 3723; W. C. ROGERS, NO.

3725; C. H. JACK, NO. 3753; HUGH FINDLEY, NO. 3754; E. COLE THORNBURG, NO. 3756; IRVIN MILLER, NO. 3757; WAYNE AND ED KER, NO. 3761; MILO G. SAUL, NO. 3766; CHARLES F. CLINE, NO. 3770; C. A. CLINE, NO. 3773; ALBERT CLEMENTS, NO. 3776; E. H. TRAVIS, NO. 3782; JOHN ALLMER, NO. 3784; JOHN A. YBARZABAL, NO. 3788; JAMES A. DAVIS, NO. 3789; PAUL BUNCH, NO. 3794; J. C. SPROUL, NO. 3795; H. L. GALYEN, NO. 3796; OTTO HOLLODAY, NO. 3799; GROVER C. GOOD, NO. 3802; JESS RICH, NO. 3805; L. F. CODR, NO. 3806; GILBERT SPROUL, NO. 3807; ROY PEARCE, NO. 3810; TULLY A. GRIFFIN, NO. 3813; CLARENCE STELLING, NO. 3814; H. FRANKLIN, NO. 3815; I. H. FINDLEY, NO. 3816; HARRY H. SCHAFFER, NO. 3822; OTIS KING, NO. 3823; LAURENCE HOUSE, NO. 3825; LOREN HOPKINS, NO. 3826; EMMETT SMITH, NO. 3833; PETE SCHOORL, NO. 3834; ANNA DAVISSON AND CLOY TALBY, NO. 3838; R. E. FINDLEY, NO. 3840; LEM WILSON, NO. 3847; ORVAL E. GREEN, ET AL., NO. 3848; ISAAC MARLER, NO. 3862; and IRWIN TROXELL, NO. 3865.

Claimants and Appellants,

vs.

UNITED STATES OF AMERICA,

Defendant and Respondent.

It Is Hereby Stipulated by and between the above-named Claimants and Appellants by P. J. Gallagher, of their counsel, and the Defendant and Respondent, United States of America, by Henry L. Hess, United States District Attorney for the District of Oregon, that the above-entitled Court may, if it seems proper to said Court, make its order consolidating all of the above-named causes for the purpose of hearing said appeals and that but one set of briefs and transcripts of record to cover all of all consolidated cases may be filed and that a single bond for covering all of said cases so consolidated on appeal may be filed, and that a single filing fee be paid, upon lodging said consolidated cases in the appellate court, if such practice meets with the approval of this Court.

/s/ P. J. GALLAGHER,

Of Counsel for Claimants
and Appellants.

/s/ HENRY L. HESS,

United States District Attorney for District of
Oregon.

[Endorsed]: Filed September 14, 1950.

[Title of Court of Appeals and Cause.]

PETITION FOR CONSOLIDATION OF ABOVE
DESCRIBED CAUSES FOR HEARING ON
APPEAL

To the Presiding Judge of the above-entitled Court:

Come now the above-named Plaintiffs and Appellants and respectfully show to the Court:

I.

That the above-named and numbered causes are a part of a total of 196 identical cases which were filed in the District Court of the United States for the District of Oregon, under the provisions of the Federal Torts Claims Act. That each of said cases involved are identical causes of law and fact, except for the item of damages claimed by the respective claimants.

II.

That when said causes were at issue an order consolidating said cases for trial was made and entered by the Hon. James Alger Fee, Judge of the District Court, in words and figures as follows:

“ . . . ; and it appearing from the pre-trial orders entered in each of the aforesaid cases that there are common questions of law and fact in both of these cases as to the duty, if any, owed by the United States to plaintiffs; and it further appearing that with respect to each of the aforesaid cases, there are common questions of law and fact relating to the alleged negligence

of the United States; and other questions of law and fact relating to the matter of liability, if any, on the part of the defendant, to plaintiffs.

It Is Ordered, by and with the consent of the attorneys of record in *the these* cases, that said cases be and the same are hereby consolidated for the purpose of trial of all of the issues of law and fact relating to the questions of duty and negligence and all other questions of law and fact relating to the matter of liability on the part of the defendant to plaintiffs, if any, to which reference has been made."

III.

That thereafter said Court made Findings of Fact and Conclusions of Law, upon which judgments were entered dismissing all of the foregoing cases, from which judgments the above-named Appellants have timely appealed to this Court, and said causes are now lodged in this Court.

IV.

That the questions of law and fact to be determined on this appeal are identical in each respective case and can be adequately presented by a consolidated transcript of the record and a consolidated brief and otherwise treated as a single case on appeal.

Wherefore, your petitioners pray for an order of this Court consolidating all of said causes for hearing on appeal and permitting the above-named Appellants to file a consolidated abstract of record and

a consolidated brief, and that it be further ordered that said Appellants be permitted to pay a single filing fee in this Court and furnish a single bond for costs.

This motion is based upon the facts set forth and Rule 42 (a) of the Federal Rules of Civil Procedure.

Respectfully submitted,

/s/ P. J. GALLAGHER,
Of Counsel for all of the
Appellants.

So Ordered:

/s/ CLIFTON MATHEWS,
/s/ WILLIAM HEALY,
/s/ WALTER L. POPE,
United States Circuit Judges.

Certificate of Mailing attached.

[Endorsed]: Filed September 14, 1950.

STATEMENT OF POINTS TO BE RELIED
UPON ON APPEAL

The Trial Court Erred:

1. In deciding the cases on the theory that Plaintiff had the burden of establishing defendant's negligence as the proximate cause of their damages rather than upon the theory that defendant failed

to perform its duty to deliver water for the irrigation of plaintiffs' lands.

2. In finding that the claimants had the burden of establishing the negligence of the defendant which resulted in defendant's failure to deliver water to claimants' lands.

3. In finding that the plaintiff had the burden of proving that the proximate cause of their damages was some negligent act of omission on the part of the defendant.

4. In failing to find that the proximate cause of plaintiffs' damages was defendant's failure to deliver water for irrigation of plaintiffs' lands.

5. In failing to find that defendant could not be relieved of its duty to deliver water to plaintiffs' lands because of the breaks in defendant's canal.

6. In finding that plaintiffs failed to establish that defendant was negligent in the construction, operation and maintenance of its canal.

7. In dismissing plaintiffs' cases and rendering judgment for the defendant.

Dated October 6th, 1950.

P. J. GALLAGHER,

Counsel for Plaintiffs in
Consolidated cases.

[Endorsed]: Filed October 24, 1950.

